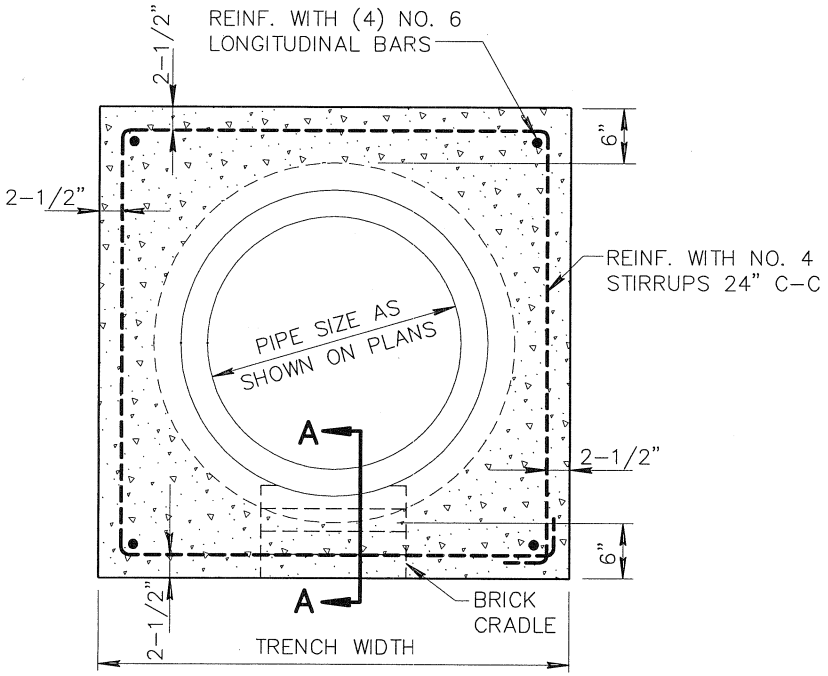
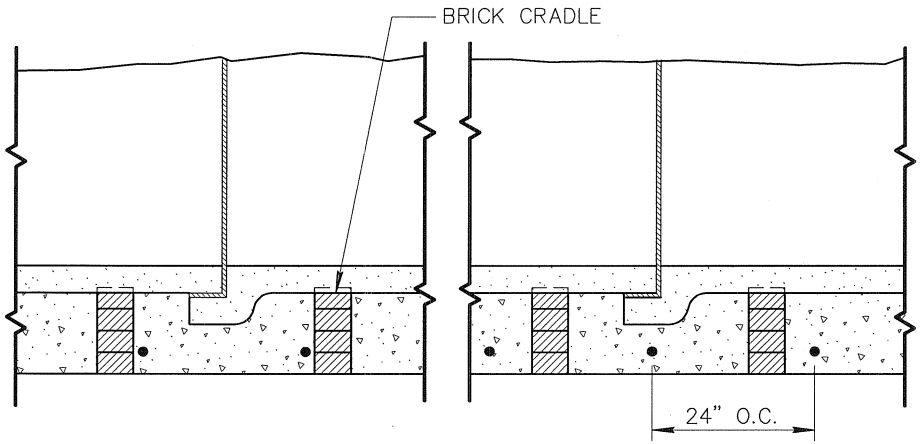
DETAIL SUPPLEMENT NO.	MUNICIPALITY	DETAIL TITLE	REVISED
402	**MAG**	**Encased Pipe for Canal Crossings**	
403-1	**MAG**	**Pipe Support Across Trenches**	
403-2	**MAG**	**Pipe Supports Across Trenches**	
403-2	**MAG**	**Alternate to Pipe Supports**	
404-1	**MAG**	**Water and Sanitary Sewer Separation/Protection**	
404-2	**MAG**	**Water and Sanitary Sewer Separation/Protection**	
404-3	**MAG**	**Water and Sanitary Sewer Separation/Protection**	
404M-AJ	AJ	Lateral Sewer Crossing Water Main	09-1999
C-408	CH	Pipe Locator Tape and Wire	09-14-2000
M-58	ME	Joint Use Water and Gas Trench Detail	07-25-1997
M-60	ME	Typical Utility Crossings	01-01-2002
405	**MAG**	**Broken Sewer Line Replacement**	
420-1	**MAG**	**Pre-Cast Concrete Sewer Manhole**	
420-2	**MAG**	**Pre-Cast Concrete Sewer Manhole**	
G-3430	GO	Concrete Sanitary Sewer Manhole Non-reinforced & Precast	07-1997
M-35	ME	Control Manhole	01-01-2002
P-1430	PH	Concrete Sanitary Sewer Manhole Non-reinforced, CIP, Pre-Cast	06-27-2001
2420	SC	Water Tight Concrete Sewer Manhole	
421	**MAG**	**Offset Manhole 8” to 30” Pipe**	
422	**MAG**	**Brick Sewer Manhole And Cover Frame Adjustment**	
C-401	CH	Manhole Concrete Collar Detail	11-19-1999
422	PE	Sewer Manhole And Cleanout Adjustments	07-16-1998
423	**MAG**	**Water Tight 30” Manhole**	

		Frame And Cover	
424	**MAG**	**24” And 30” Manhole Frame And Cover**	
C-400	CH	24” And 30” Manhole Frame And Cover	01-11-2002
C-400 (2)	CH	Manhole Cover	01-11-2002
P1424	PH	Manhole Cover 24”	08-08-2003
P1424-1	PH	Manhole Cover 30”	08-08-2003
2421	SC	Sanitary Sewer Manhole Cover	
425	**MAG**	**24” Aluminum Frame And Cover**	
426	**MAG**	**Drop Sewer Conncections**	
	AV	Typical Sewer Service for Sewer Mains > 10’ Deep	
64	GI	4” Sewer Service Installation	
427	**MAG**	**Stub Out And Plugs**	
428	**MAG**	**Manhole Steps**	
429	**MAG**	**Industrial Waste Control Vault With Manhole**	
C-403	CH	Industrial Waste Sampling Manhole	11-19-1999
G-740	GL	Control Sampling Vault	06-28-2002
G-3450	GO	Monitor/Sampling Vaults	07-1997
2460	SC	Monitor/Sampling Vaults	
T-454	TE	Control Sampling Vault	1998
440-1	**MAG**	**Type ‘A’ – Sewer Building Connection Electronic Ball Markers (STD)**	
440-2	**MAG**	**Type ‘B’ – Sewer Building Connection 2-Way Cleanout and Meter Box**	
440-3	**MAG**	**Type ‘C’ – Sewer Building Connection 1-Way Cleanout and Meter Box**	
440-4	**MAG**	**Sewer Service Curb Crossing Stamp Detail**	
C-410	CH	Deep Cut House Connection (Sewer Lateral)	01-11-2002
2403	SC	Two-Way Force Main Clean-Out -3” And Above	
2404	SC	Force Main Clean-Out With Sewage Air Release Valve	
2440	SC	Sewer Building Connection	03-23-2005
441	**MAG**	**Sewer Cleanout**	

G-3440	GO	Force Main Cleanouts	07-1997
G-3441	GO	Sewage Air Release Valve	07-1997
G-3442	GO	Force Main – Manhole Discharge	07-1997
SERIES 400 MISCELLANEOUS DETAILS			
C-404	CH	Small Water User (Without Lake) Reclaimed Water Turn-Out	01-11-2002
C-404 (2)	CH	Small Water User (Without Lake) Reclaimed Water Turn-Out	01-11-2002
C-405	CH	Large Water User (With Lake) Reclaimed Water Turn-Out	01-11-2002
C-406	CH	Valve Box Installation (Reclaimed Water)	01-11-2002
C-406 (2)	CH	Valve Box Installation (Reclaimed Water)	01-11-2002
C-409	CH	Pipe Penetration And Manhole Frame Termination Detail	01-11-2002
PIPE BEDDING			
C-402	CH	PVC Sewer Pipe Bedding Detail	01-11-2002
86	GI	Bedding Detail PVC Sewer Pipe	08-01-1995
87	GI	Bedding Detail V.C.P. Sewer Pipe	08-01-1995
88	GI	PVC Reclaimed Water Pipe Bedding Detail	08-14-2001
LINT INTERCEPTOR			
G-710	GL	Laundry Waste Interceptor	06-28-2002
M-36.2	ME	Lint Interceptor	02-08-1996
SAND AND OIL INTERCEPTOR			
G-720	GL	Sand And Oil Interceptor	06-28-2002
G-722	GL	Sand And Oil Interceptor For A Service Station	06-28-2002
GREASE AND OIL INTERCEPTOR			
G-724	GL	Grease/Oil Interceptor (Food Establishments)	06-28-2002
M-36.1	ME	Grease, Oil, And Sand Interceptor	02-08-1996
INDUSTRIAL WASTE INTERCEPTOR			
G-725	GL	Three Chamber Industrial Waste Interceptor	06-28-2002

M-36.3	ME	Industrial Waste Interceptor	01-01-2004
V.C.P. TRENCH LOADING			
G-3420	GO	V.C.P. Trench Loading	07-1997
G-3421	GO	8” & 10” V.C.P. Trench Loading	07-1997
G-3422	GO	12” & 15” V.C.P. Trench Loading	07-1997
G-3423	GO	18” & 12” V.C.P. Trench Loading	07-1997
G-3424	GO	24” & 27” V.C.P. Trench Loading	07-1997
G-3425	GO	30” & 33” V.C.P. Trench Loading	07-1997
G-3426	GO	36” & 39” V.C.P. Trench Loading	07-1997
G-3427	GO	42” V.C.P. Trench Loading	07-1997
P1120	Phoenix	V.C.P. Trench Loading	07-09-1992
P1121	Phoenix	8” & 10” V.C.P. Trench Loading	07-09-1992
P1122	Phoenix	12” & 15” V.C.P. Trench Loading	07-09-1992
P1123	Phoenix	18” & 21” V.C.P. Trench Loading	07-09-1992
P1124	Phoenix	24” & 27” V.C.P. Trench Loading	07-09-1992
P1125	Phoenix	30” & 33” V.C.P. Trench Loading	07-09-1992
P1126	Phoenix	36” & 39” V.C.P. Trench Loading	07-09-1992
P1127	Phoenix	42” Trench Loading	07-09-1992
MISCELLANEOUS			
M-33	ME	Flume Vault Structure	01-01-2002
M-34	ME	Gasketed Sewer Fittings	02-01-2002
M-61	ME	Delineator	01-01-2005
175	PE	Interconnect Trench Detail	12-07-2000
P1431	PH	Sewer Tap Depth & Marking	08-06-1999
P1432	PH	Sewer Tap Retrofitting	08-06-1999
P1435	PH	Sanitary Sewer Manhole Knockout	07-19-2004
2402	SC	Force Main Discharge Manhole	
2405	SC	Sewer Air Release Valve	



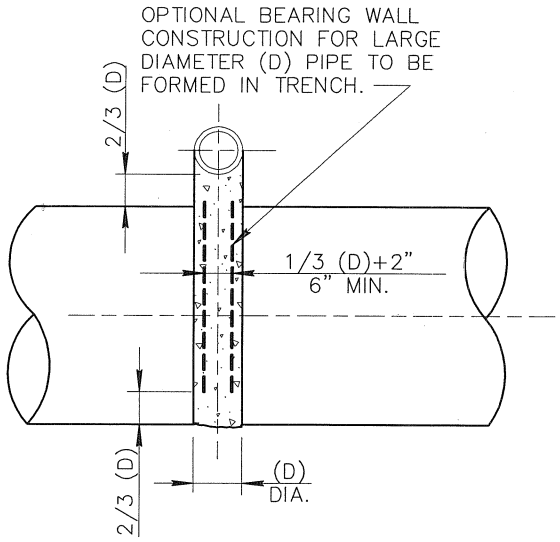


SECTION A-A

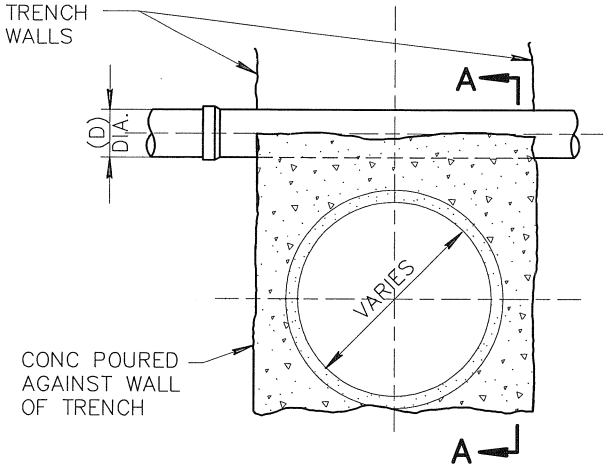
NOTES:

1. LAY PIPE TO LINE AND GRADE ON BRICK CRADLE.
2. PLACE CLASS 'C' CONCRETE PER SECT. 725 & 505, IN SUCH A MANNER AS NOT TO FLOAT THE PIPE.

DETAIL NO.			REVISED	DETAIL NO.
402	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	ENCASED PIPE FOR CANAL CROSSINGS		402

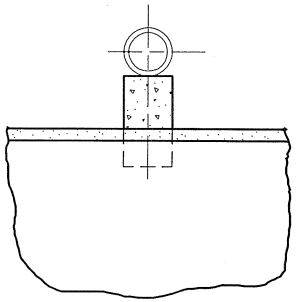


SECTION A–A

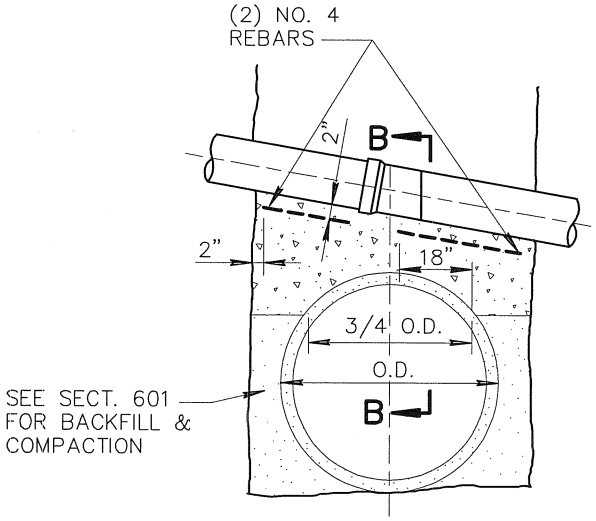


PIPE CONDUIT

TYPE 'A'



SECTION B–B



PIPE CONDUIT

TYPE 'B'

NOTES:

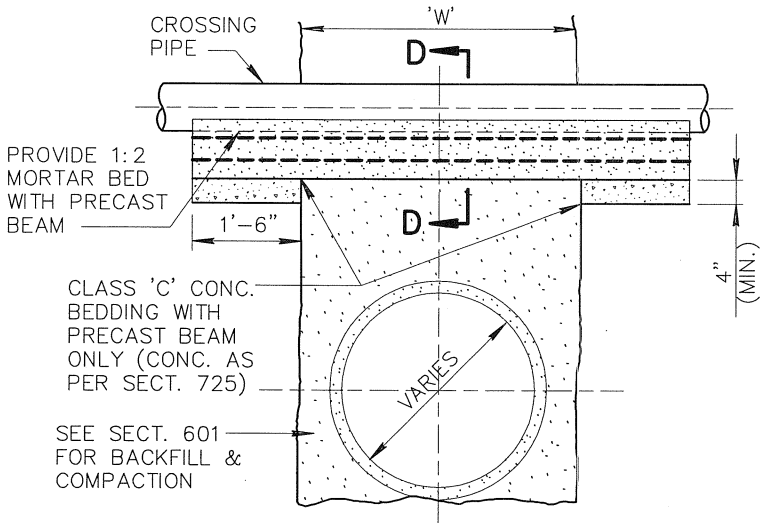
1. TYPE 'A' PIPE SUPPORT MAY BE USED FOR ANY TYPE CROSSING CONDITION.
2. TYPE 'C' PIPE SUPPORT MAY BE USED FOR CROSSING PIPES WITH A BELL DIAMETER OF 18" OR LESS IF SUFFICIENT CLEARANCE OVER STORM SEWER IS AVAILABLE AND TOTAL SPAN IS LESS THAN 34'
3. INTERMEDIATE PIPE SUPPORT SHALL BE USED IN CONJUNCTION WITH TYPE 'C' PIPE SUPPORT IF TOTAL SPAN EXCEEDS MAX. 'W' IN TABLE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL SUPPORTS BOTH PERMANENT AND TEMPORARY. TEMPORARY SUPPORTS SHALL NOT BE A SEPARATE PAY ITEM.
5. PERMANENT PIPE SUPPORTS MAY BE DECREASED FROM PLAN QUANTITIES OR EXTENDED TO INCLUDE SOME LISTED BELOW AS TEMPORARY SUPPORTS IF CONDITIONS WARRANT THESE CHANGES AT THE TIME OF CONSTRUCTION. DECISION SHALL BE MADE BY THE ENGINEER.
6. WHEN TYPE 'A' PIPE SUPPORT IS USED AND WHENEVER SO DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PIERCE THE WALL WITH SUITABLE OPENINGS TO PREVENT UNEQUAL PRESSURE RESULTING FROM FLOODING OF THE BACKFILL. THE VOLUME OF THE PIERCED OPENING SHALL NOT EXCEED 1/2 THE VOLUME OF THE SUPPORTING WALL.
7. USE TYPE 'B' PIPE SUPPORT INSTEAD OF TYPE 'C' WHEN CLEARANCE IS LESS THAN 'Y' IN TABLE, BETWEEN PIPES.
8. CLASS 'A' CONCRETE AS PER SECT. 725 UNLESS OTHERWISE NOTED.

SCHEDULE OF REQUIRED SUPPORTS

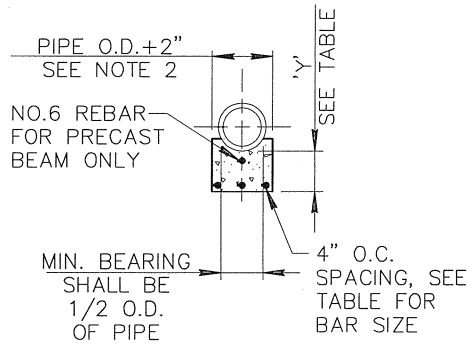
PERMANENT	TEMPORARY
SEWER LINES	CAST IRON PIPE CONC. IRRIG. PIPE
OTHER UTILITIES AS NOTED ON THE PLANS OR AS REQUIRED BY THE ENGINEER AT TIME OF CONSTRUCTION.	BURIED TELCO. GAS PIPES CONC. STORM DRAIN CONC. BOX CULVERT TRAFFIC CONTROL CONDUIT WATER & SEWER LINES

DETAIL NO.			REVISED	DETAIL NO.
403-1	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	PIPE SUPPORT ACROSS TRENCHES		403-1

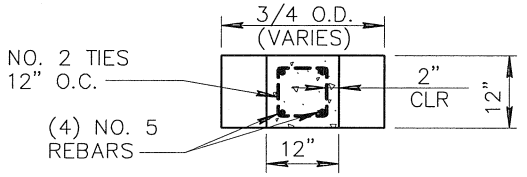
TABLE				
'W'	DEPTH OF COVER ON SUPPORTS			
	0' TO 8'		8' TO 16'	
	BAR NO.	Y	BAR NO.	Y
TO 6'	5	8"	6	11"
7'	5	9"	6	12"
8'	5	10"	6	13"
9'	6	11"	6	14"
10'	6	12"	7	15"
11'	6	13"	7	16"
12'	6	14"	7	17"
13'	7	15"	7	19"
14'	7	16"	8	20"
15'	7	17"	8	21"
16'	7	18"		
17'	8	19"		



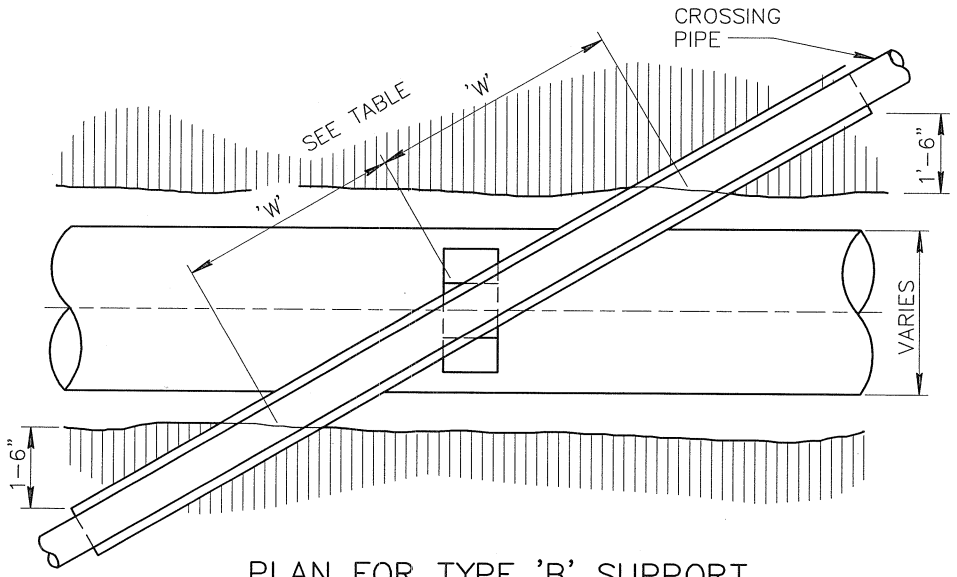
TYPE 'C'



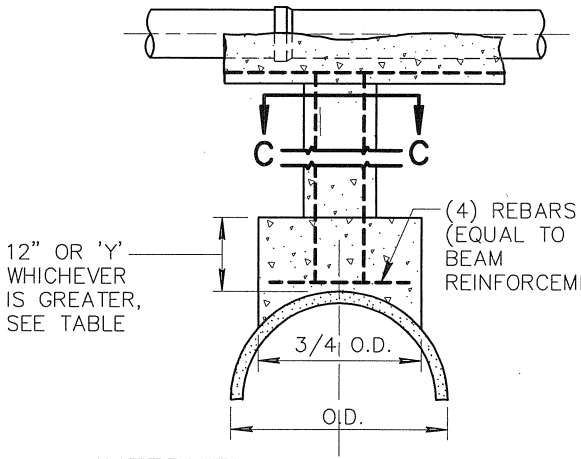
SECTION D–D



SECTION C–C

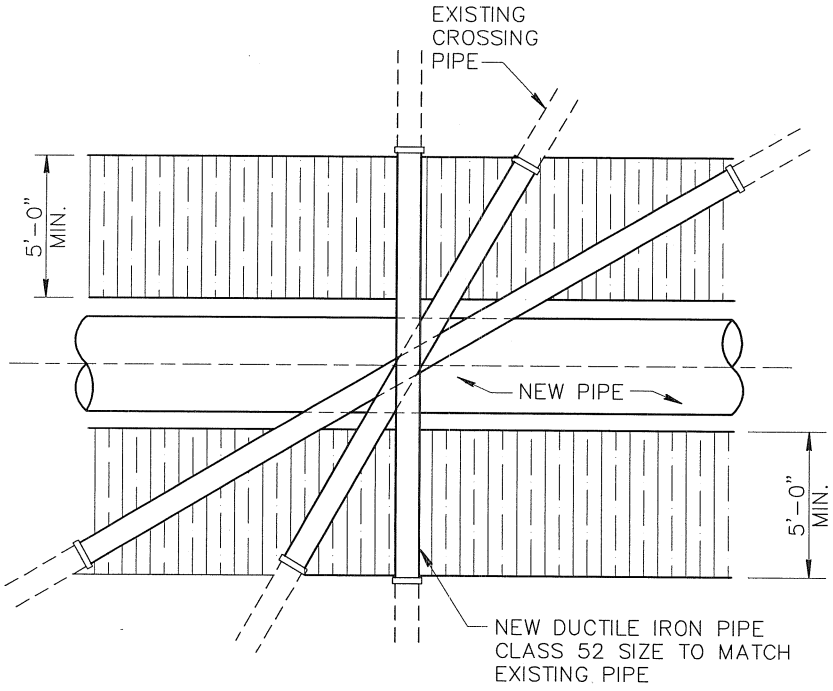


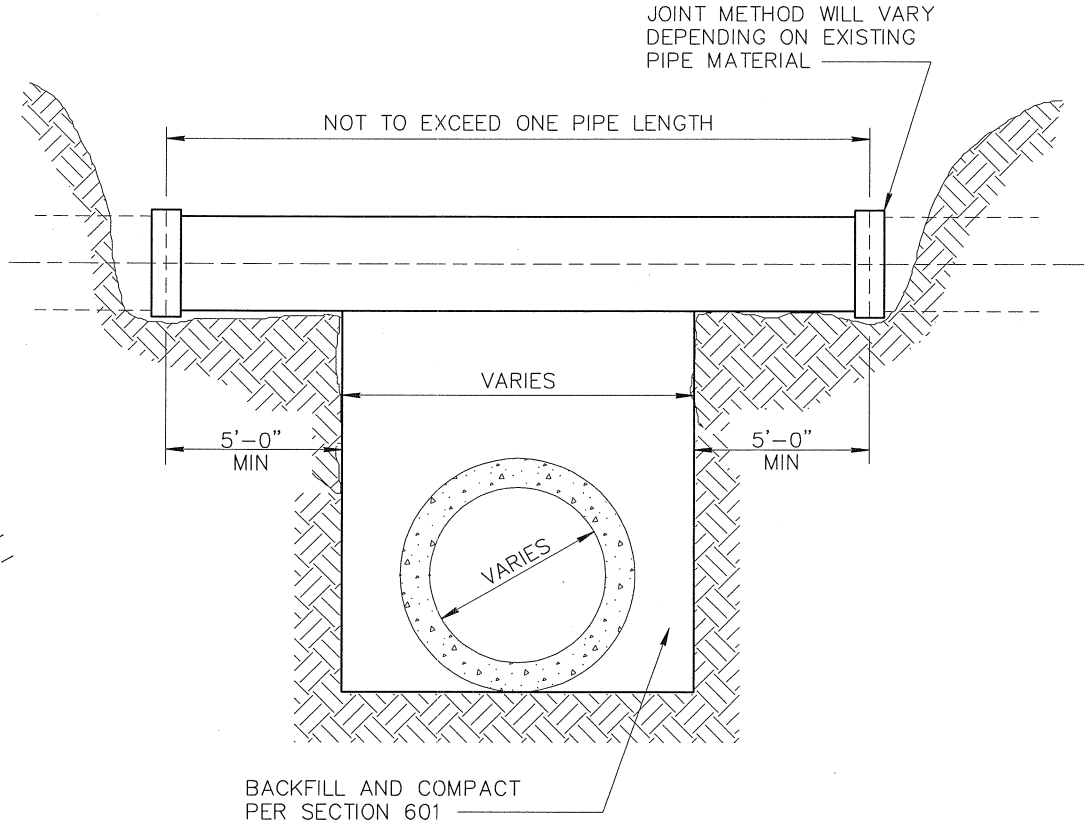
PLAN FOR TYPE 'B' SUPPORT



INTERMEDIATE SUPPORT FOR TYPE 'B' CROSSINGS

DETAIL NO.			REVISED	DETAIL NO.
403-2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	PIPE SUPPORTS ACROSS TRENCHES		403-2

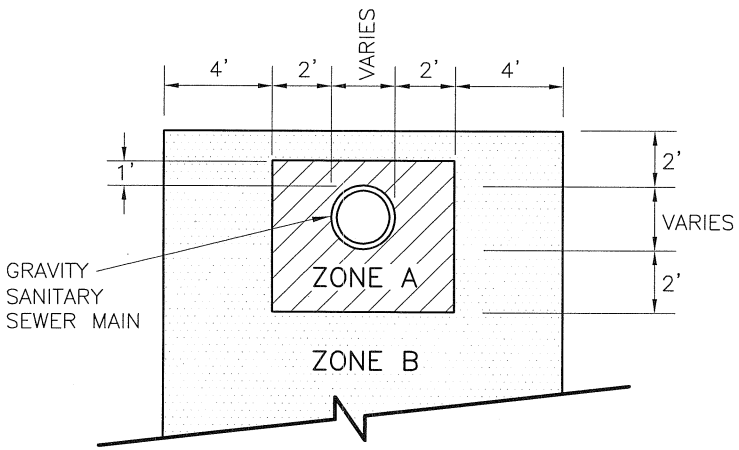




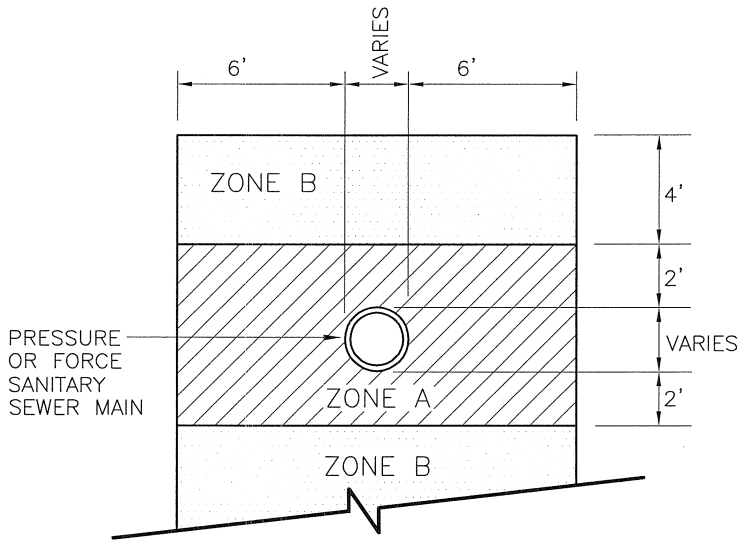
DETAIL NO.			REVISED	DETAIL NO.
403-3	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	ALTERNATE TO PIPE SUPPORT		403-3

WATER LINE EXCLUSION AND EXTRA PROTECTION ZONES*

GRAVITY SANITARY SEWER



PRESSURIZED SANITARY SEWER



NOTES:

ZONE A: NO WATER LINES ALLOWED/MINIMUM SEPARATION.

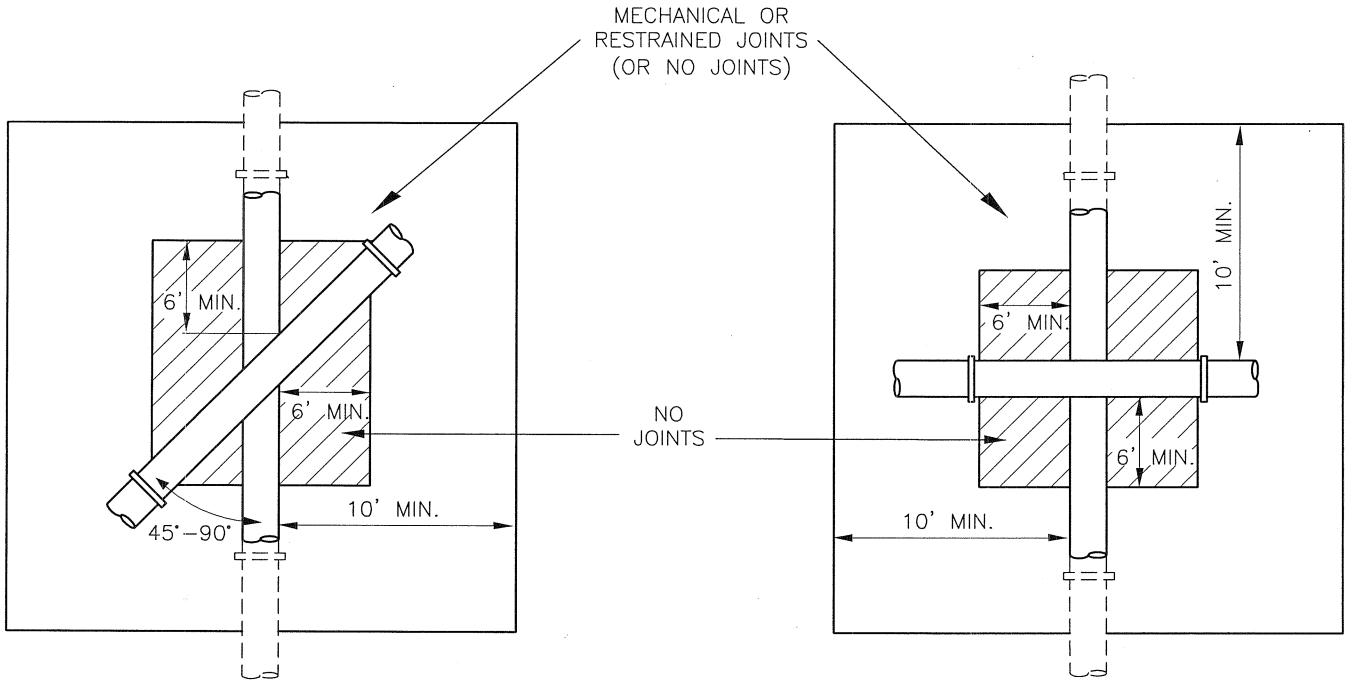
ZONE B: EXTRA PROTECTION REQUIRED FOR WATER LINES.

* REFER TO STANDARD 610, WATER LINE CONSTRUCTION.

DETAIL NO.			REVISED	DETAIL NO.
404–1	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	WATER AND SANITARY SEWER SEPARATION/PROTECTION	01–01–2006	404–1

WATER LINE EXTRA PROTECTION

DUCTILE IRON PIPE WITH RESTRAINED OR MECHANICAL JOINTS*



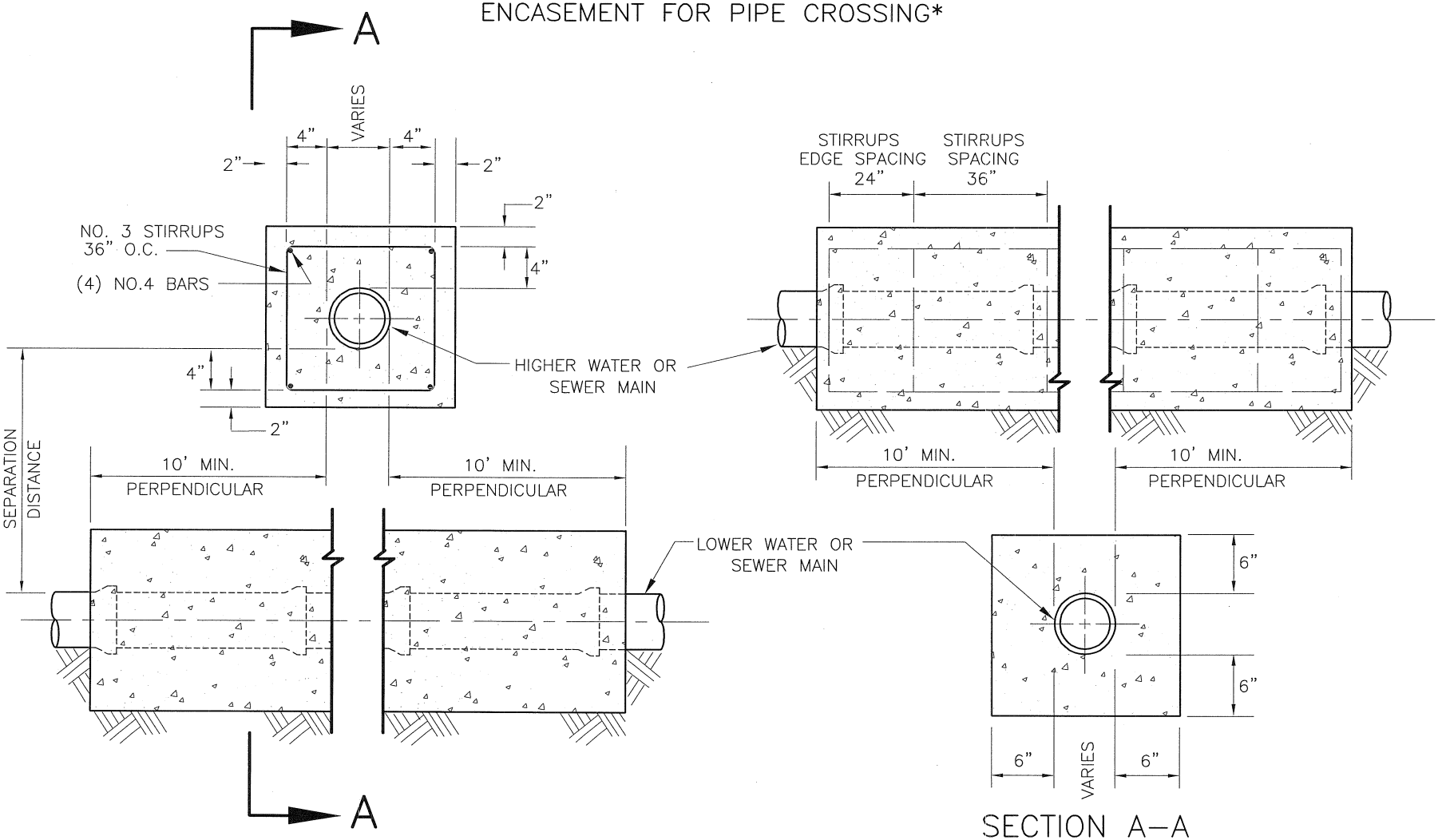
EXTRA PROTECTION DUCTILE IRON PIPE
(GRAVITY OR PRESSURIZED) SEWER LINE

NOTES:

* REFER TO MAG STANDARD SPECIFICATION SECTION 610.

DETAIL NO.			REVISED	DETAIL NO.
404-2	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	WATER AND SANITARY SEWER SEPARATION/PROTECTION	01-01-2006	404-2

ENCASEMENT FOR PIPE CROSSING*

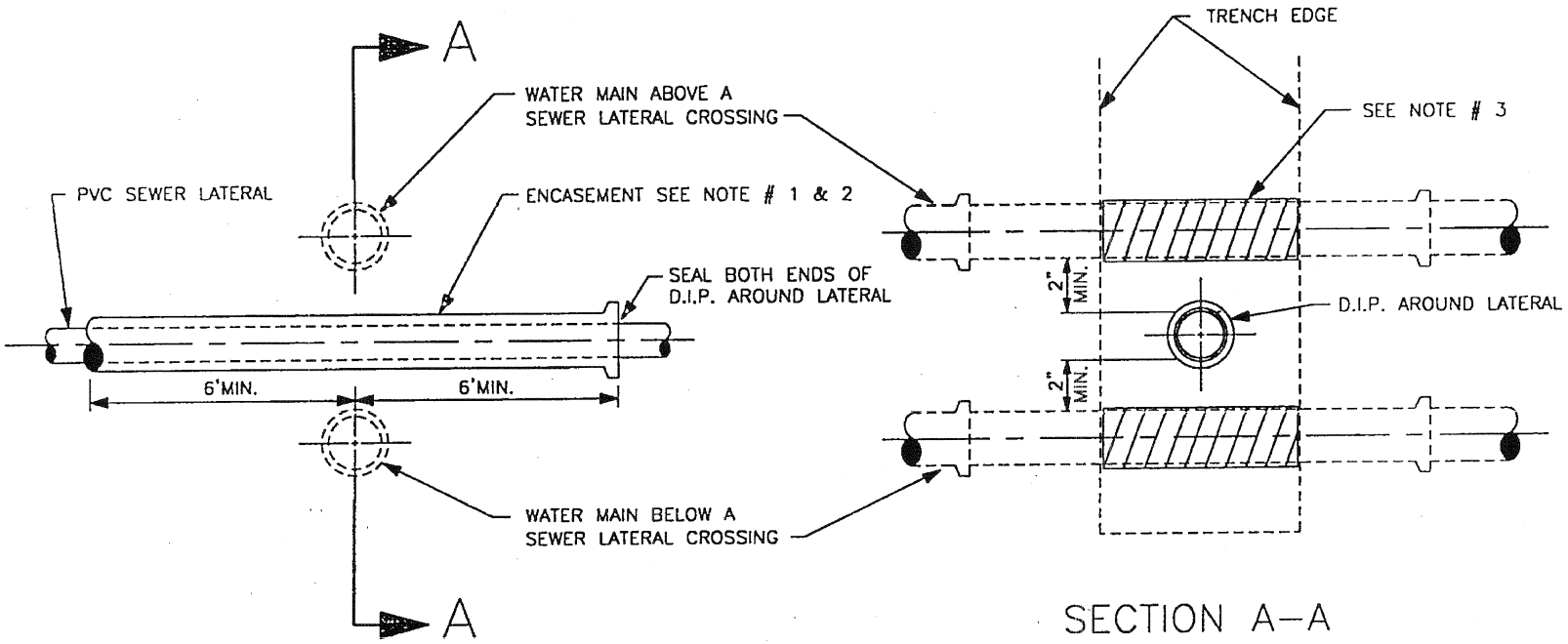


SECTION A–A

NOTES:

1. CLASS 'C' CONCRETE AS PER SECTION 725.
*REFER TO MAG STANDARD SPECIFICATION SECTION 610.

DETAIL NO.			REVISED	DETAIL NO.
404–3	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	WATER AND SANITARY SEWER SEPARATION/PROTECTION	01–01–2006	404–3

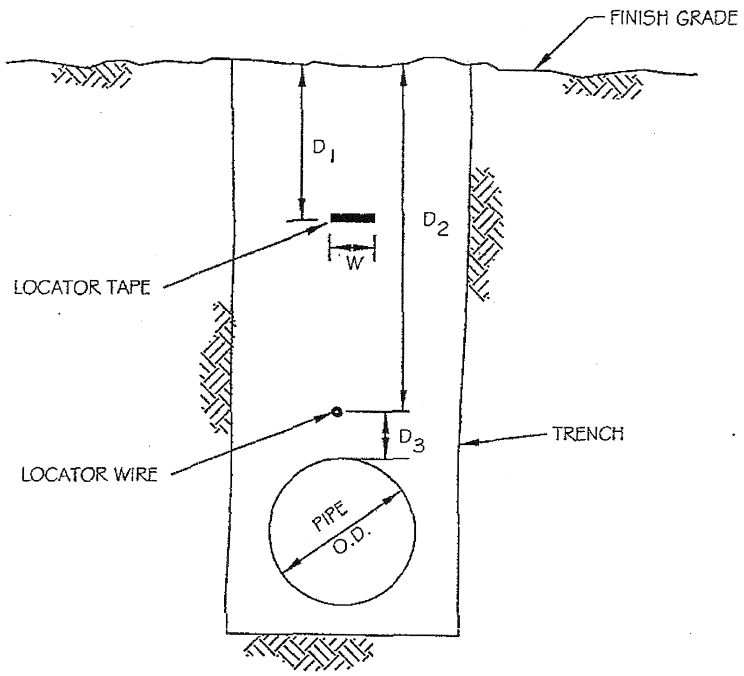


SECTION A–A

NOTES:

1. THE ENCASEMENT SHALL EXTEND AT LEAST 6' ON EACH SIDE OF WATER MAIN AND MUST INCLUDE THE NEAREST JOINT.
2. A 4" OR 6" BUILDING CONNECTION, NO PROTECTION IS REQUIRED IF THE VERTICAL SEPERATION IS MORE THAN 12" ABOVE OR BELOW A WATER MAIN.
3. ENCASEMENT IS REQUIRED IN ALL CASES WHERE A SANITARY SEWER 4" OR 6" BUILDING CONNECTION CROSSES LESS THAN 12" ABOVE OR BELOW THE WATER MAIN AND THERE SHALL BE AT LEAST 2" OF CLEARANCE BETWEEN THE SEWER AND THE WATER MAIN. THE WATER MAIN MUST BE WRAPPED WITH MIN. 2 MIL PROTECTIVE MATERIAL AND THE SEWER CONNECTION BE ENCASED WITH DUCTILE IRON PIPE 6 ' EACH SIDE OF PIPE WITH NO JOINTS.
4. 1 SACK SLURRY PER SEC. 728 BACKFILL FROM THE BOTTOM OF THE SEWER PIPE TO 2" DEPTH UNDER ROADWAY, CONTINUING ON WITH 4" DEPTH FROM THE TOP OF TRENCH TO PROPERTY LINE.

DETAIL NO. 404M–AJ	STANDARD DETAIL Revised September, 1999	LATERAL SEWER CROSSING WATER MAIN	CITY OF APACHE JUNCTION PUBLIC WORKS/ENGINEERING (480) 982–1055	DETAIL NO. 404M–AJ



NOTES:

1. LOCATOR TAPE AND LOCATOR WIRE SHALL BE INSTALLED ON ALL POTABLE AND RECLAIMED WATER LINES FOR ALL PIPE MATERIALS AND SIZES 4" AND LARGER
2. LOCATOR TAPE SHALL BE PER MAG STD. SPEC. SEC. 616.4, EXCEPT AS MODIFIED HEREON.
3. LOCATOR WIRE SHALL BE BARE COPPER WIRE, 14 GAUGE.
4. TAPE MARKING SHALL BE PER MAG STD. SPEC. SEC. 616.3, EXCEPT AS MODIFIED HEREON.
5. D_1 TO BE 24"
6. D_3 TO BE 12", HOWEVER, ADJUST D_3 , AS NECESSARY, SO THAT D_2 IS NEVER GREATER THAN 48".
7. LOCATOR WIRE IS TO ORIGINATE/ TERMINATE AT VALVE BOXES AND SECURED TO WALL OF VALVE BOX NO MORE THAN 12" BELOW COVER.

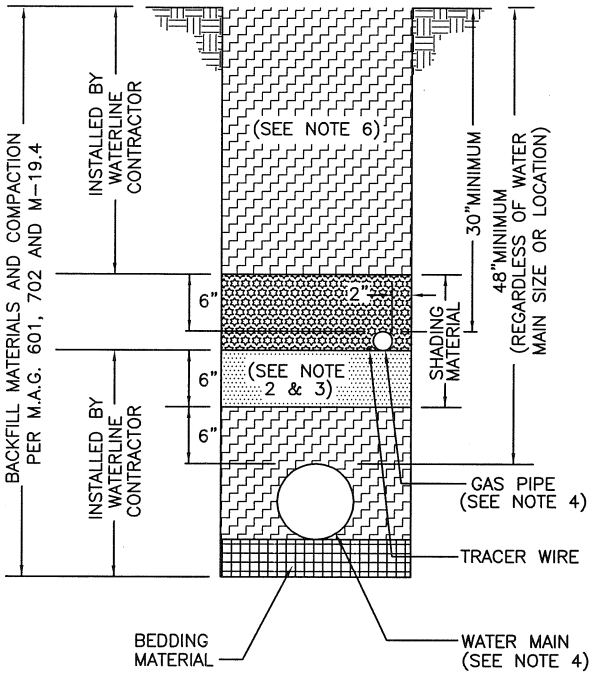
LOCATOR TAPE COLOR AND MARKING SCHEDULE

PIPELINE USE	W	COLOR	PRINTED MESSAGE
RECLAIMED WATER	MAG SPEC 616.4	MAG SPEC 616.3	MAG SPEC 616.3
POTABLE WATER	MAG SPEC 616.4	SOLID COLUMBIA BLUE	CAUTION POTABLE WATER LINE

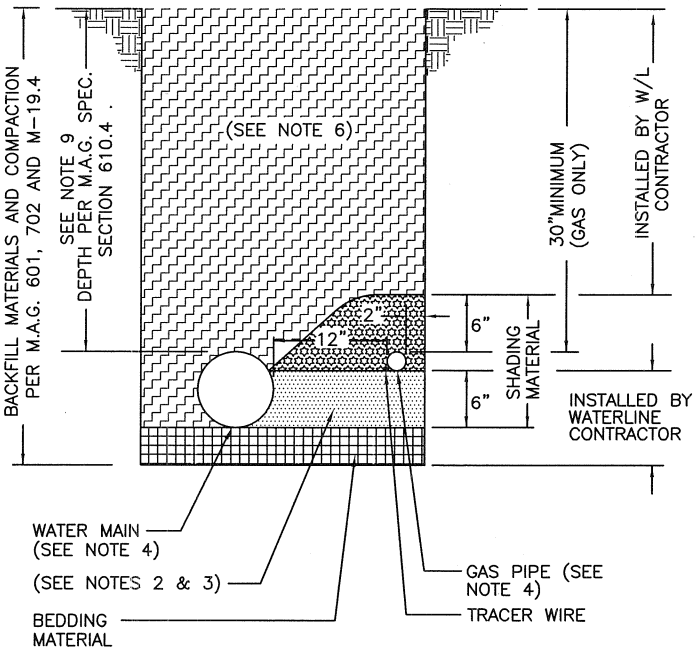
C-408	CITY OF CHANDLER STANDARD DETAIL	PIPE LOCATOR TAPE & WIRE	APPROVED: Elizabeth McInnis CITY ENGINEER DATE: September 19, 2000	DETAIL NO. C-408 NTS

NOTES

1. GAS PIPE SHALL HAVE A MINIMUM OF 30" COVER AS MEASURED FROM WHICHEVER IS LOWER, FINISHED GRADE OF PAVEMENT OR NATURAL GROUND, UNLESS OTHERWISE NOTED. "BLUE TOPS" MAY BE REQUESTED TO VERIFY COVER AS REQUIRED PER NOTE 1 OF M-49.1.
2. AFTER THE WATER MAIN HAS BEEN INSTALLED, THE CONTRACTOR SHALL INSTALL SHADING MATERIAL TO PROVIDE A LEVEL UNIFORM BEARING SURFACE FOR THE INSTALLATION OF THE GAS PIPE.
   THE CITY OF MESA OR ITS GAS LINE CONTRACTOR WILL FURNISH AND INSTALL THE GAS PIPE AND TRACER WIRE AFTER THE WATER MAIN HAS BEEN INSTALLED.
3. SHADING MATERIAL ADJACENT TO THE CITY OF MESA GAS PIPE SHALL BE SELECT SANDY TYPE SOIL FREE OF ROCKS OR DEBRIS THAT WILL PASS THROUGH A 3/8" SCREEN AS INSPECTED AND APPROVED BY CITY OF MESA GAS INSPECTION PERSONNEL. CITY OF MESA SHALL FURNISH ALL SHADING MATERIAL, WHEN NECESSARY, AND INSTALL THE SHADING MATERIAL FROM THE BOTTOM OF THE GAS PIPE TO 6" ABOVE THE TOP OF THE GAS PIPE.
4. SEE CONSTRUCTION PLANS FOR WATER MAIN AND GAS PIPE SIZES.
5. WHERE WATER AND GAS ARE INSTALLED IN A JOINT TRENCH, THE CONTRACTOR SHALL ADJUST BOTH WATER AND GAS VALVE HOUSING BOXES TO FINISHED GRADE ACCORDING TO THE APPLICABLE STANDARD DETAIL. ALSO, THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN ALL NECESSARY BARRICADING, STEEL PLATING AND TRENCH SHORING REQUIRED DURING GAS INSTALLATION.
6. CONTRACTOR SHALL COMPLETE ALL BACKFILL TO FINISHED GRADE AFTER THE GAS PIPE INSTALLATION IS COMPLETED.
7. A MINIMUM OF 12" OF SEPARATION SHALL BE MAINTAINED BETWEEN GAS PIPE, WATER MAIN AND OTHER UNDERGROUND FACILITIES WHEN OVERCROSSING OR UNDERCROSSING.
8. CITY MAY SPECIFY TRENCH DETAIL TO BE USED. IF NOT, CONTRACTOR HAS THE OPTION OF INSTALLING TRENCH DETAIL 'A' OR 'B', UNLESS OTHERWISE NOTED. PREFERRED INSTALLATION IS TRENCH DETAIL 'A'.
9. ALL WATER MAINS IN MAJOR STREETS SHALL HAVE A MINIMUM COVER OF 48-INCHES OVER THE TOP OF THE PIPE. WATER MAINS IN OTHER LOCATIONS SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE AS FOLLOWS:
   (A) 36-INCHES FOR MAINS SMALLER THAN 12-INCHES
   (B) 48-INCHES FOR MAINS 12-INCH AND LARGER.



TRENCH DETAIL 'A'



TRENCH DETAIL 'B'

LEGEND

INSTALLED BY THE CITY OR ITS GASLINE CONTRACTOR

JOINT USE WATER AND GAS TRENCH DETAIL

DETAIL NO. M-58

REV. 07/25/97

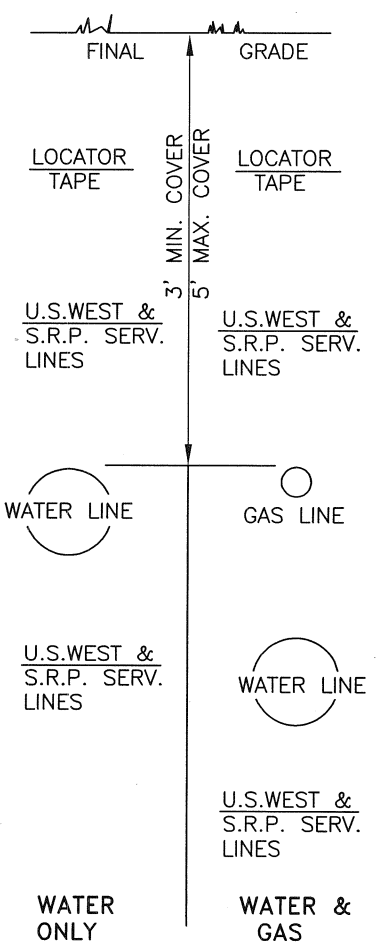


FIG. 1

NOTES

1. IF THE CITY OF MESA'S FACILITIES HAVE LESS THAN THREE (3) FEET OF COVER, NON–CITY PUBLIC UTILITY COMPANIES WILL INSTALL THEIR FACILITIES UNDER THE CITY OF MESA'S FACILITIES.

2. IF THE CITY OF MESA'S FACILITIES HAVE THREE (3) FEET TO FIVE (5) FEET OF COVER, NON–CITY PUBLIC UTILITY COMPANIES MAY INSTALL THEIR SERVICE LINES (SECONDARY) AND CABLES ABOVE MESA'S FACILITIES. IN THIS SITUATION NON–CITY PUBLIC UTILITY COMPANIES SHALL INSTALL THEIR TRUNK LINES (PRIMARY) UNDER MESA'S FACILITIES. SEE FIG. 1.

3. IF THE CITY OF MESA'S FACILITIES HAVE FIVE (5) FEET OF COVER OR MORE, NON–CITY PUBLIC UTILITY COMPANIES SHALL INSTALL BOTH SERVICE LINES & TRUNK LINES ABOVE MESA'S FACILITIES. SEE FIG. 2.

4. IN CERTAIN SITUATIONS THE CITY OF MESA HAS FACILITIES THAT ARE PARALLEL BUT SEPARATED BY SOME HORIZONTAL DISTANCE. IT IS POSSIBLE THAT MESA'S FACILITIES WOULD BE AT DIFFERENT DEPTHS THEREBY ALLOWING NON–CITY PUBLIC UTILITIES TO PASS UNDER ONE FACILITY, OVER ANOTHER, AND STILL COMPLY WITH THE ABOVE NOTES. IF THE HORIZONTAL SEPARATION BETWEEN MESA'S FACILITIES IS THREE (3) FEET OR LESS AND THE NOTES REQUIRE THAT NON–CITY PUBLIC UTILITIES PASS UNDER ONE OF MESA'S FACILITIES, THEY SHALL PASS UNDER BOTH OF MESA'S FACILITIES.

5. NON–CITY PUBLIC UTILITY COMPANIES WILL INSTALL MARKER TAPE MATERIAL FIVE (5) FEET EACH WAY OF A CROSSING (ONE FOOT ABOVE CABLES) WHEN ANY CABLE IS INSTALLED ABOVE THE CITY OF MESA'S FACILITIES.

6. NON–CITY PUBLIC UTILITY COMPANIES SHALL INSTALL BURIED CONDUIT AND/OR CABLE AT SUFFICIENT DEPTH SO AS TO PROVIDE AT LEAST TWELVE (12) INCHES OF VERTICAL CLEARANCE WHETHER ABOVE OR BELOW WATER AND GAS LINES. A TWENTY–FOUR (24) INCH HORIZONTAL SEPARATION SHALL BE MAINTAINED FROM EXISTING OR PROPOSED WATER AND GAS LINES, PURSUANT TO THIS DETAIL.

7. FIGURES 1 AND 2 APPLY ONLY TO CROSSINGS AND NOT TO PARALLEL INSTALLATIONS.

* NON–CITY OF MESA PRIVATE UTILITY COMPANIES SHALL INSTALL THEIR FACILITIES AS DIRECTED BY THE CITY ENGINEER AND PER THE SPECIAL CONDITIONS OF THE PERMIT.

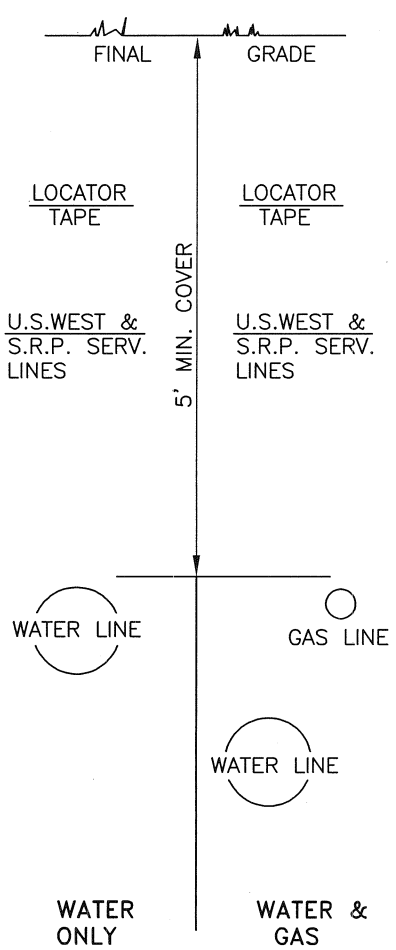
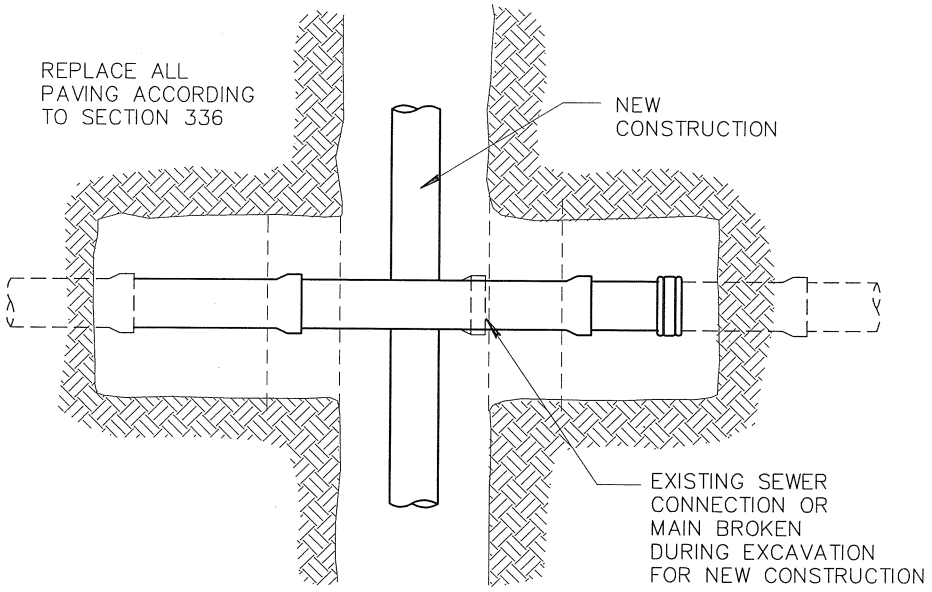


FIG. 2

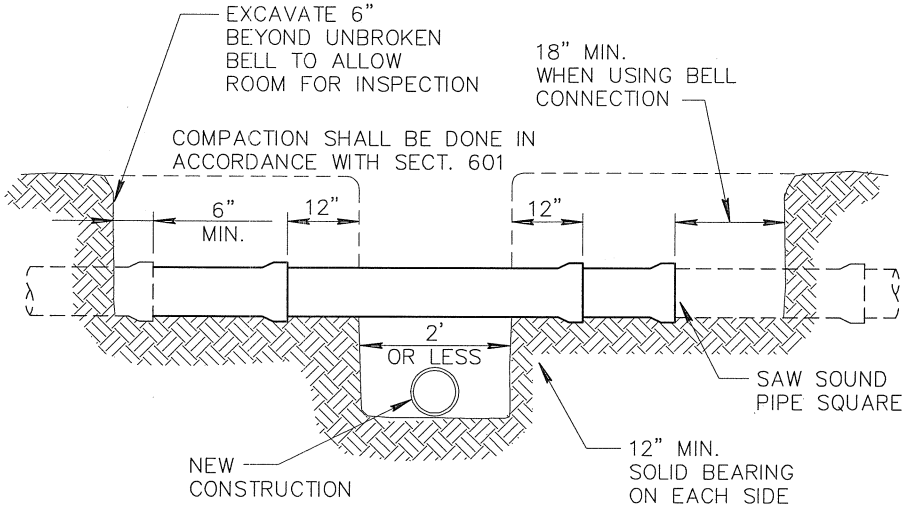
TYPICAL UTILITY CROSSINGS

DETAIL NO. M–60

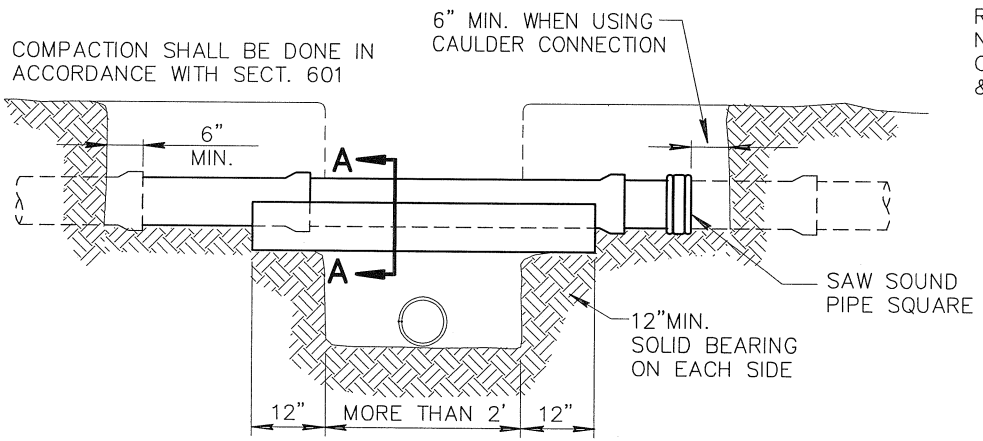
REV. 01/01/02



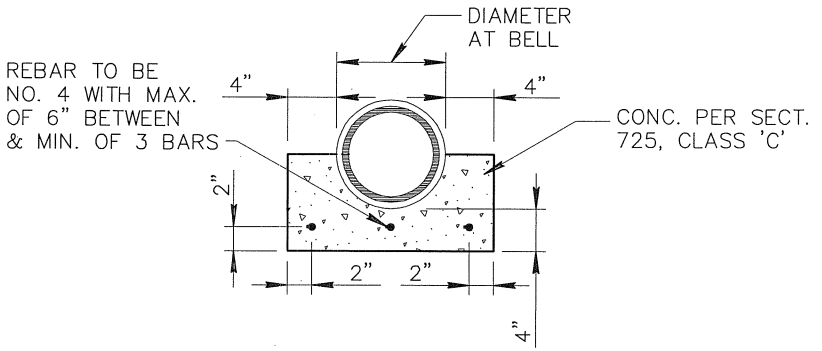
PLAN VIEW OF REPLACEMENT



REPLACEMENT WHEN NEW TRENCH
2' WIDE OR LESS



REPLACEMENT WHEN NEW TRENCH
MORE THAN 2' WIDE

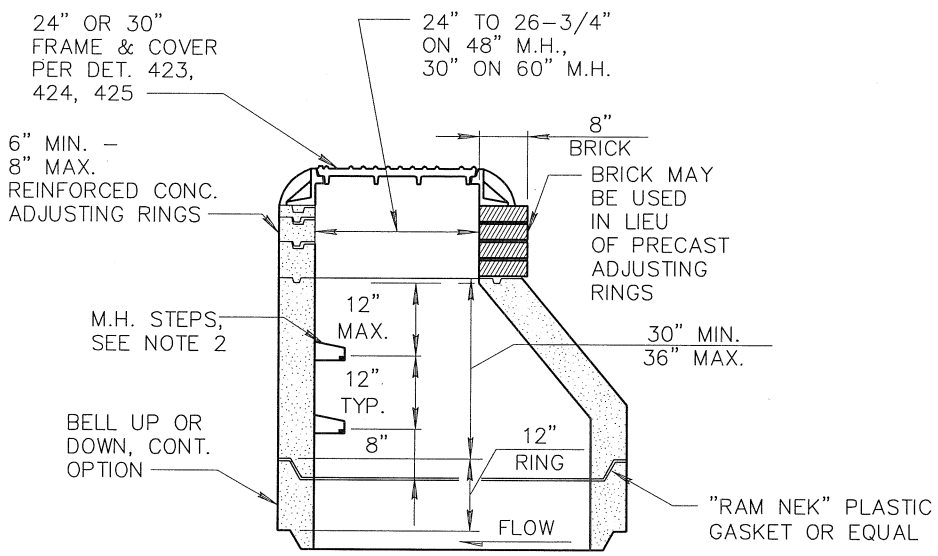


SECTION 'A–A'

NOTES:

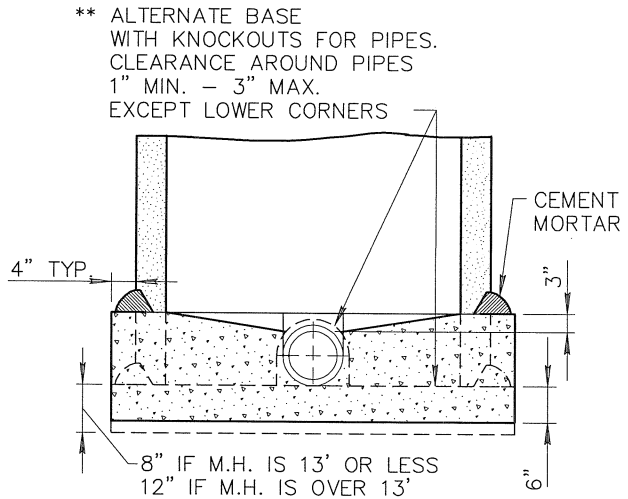
1. BROKEN PIPE SHALL BE REPLACED WITH A MINIMUM OF ONE FULL JOINT AND TWO SHORT LENGTHS WITH UNBROKEN BELLS. CONSTRUCTION AND JOINTS TO BE MADE AS PER SECTION 615.

DETAIL NO.			REVISED	DETAIL NO.
405	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	BROKEN SEWER LINE REPLACEMENT		405



TYPE 'A' TOP

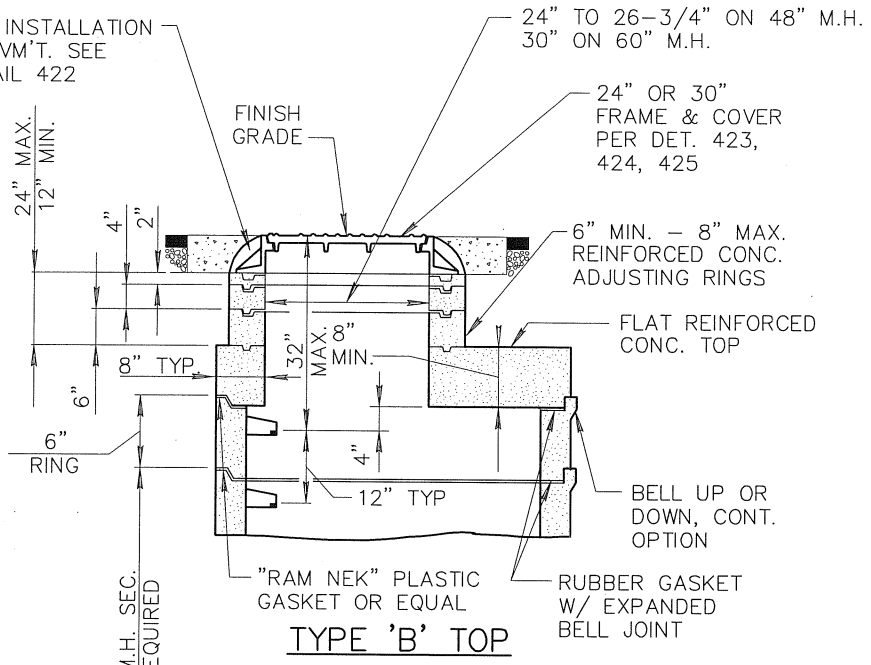
(PRE-CAST ECCENTIC CONICAL TOP M.H.)

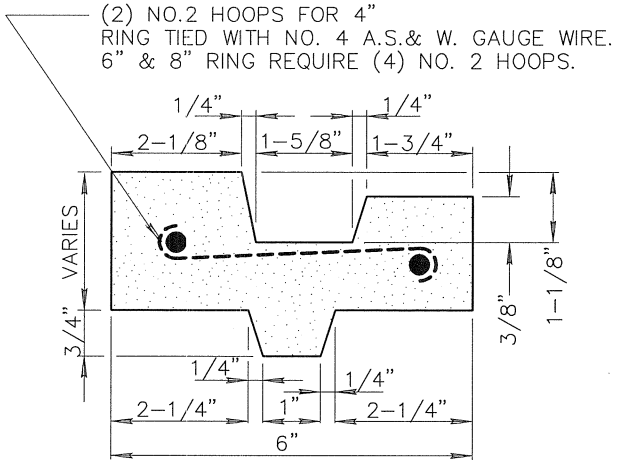


NOTES:

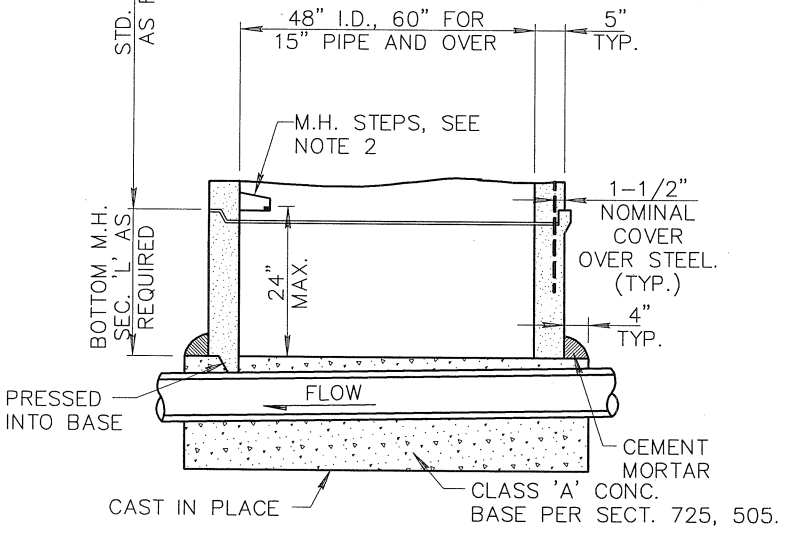
1. PRE-CAST, REINFORCED M.H. SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH A.S.T.M. C-478 EXCEPT AS MODIFIED HEREIN.
2. M.H. STEPS SHALL BE INSTALLED AT SITE OF M.H. SECTION MANUFACTURE. MINIMUM CLEARANCE EACH SIDE OF M.H. LEG SHALL BE 1". STEPS SHALL BE MOUNTED WITH 2 TO 1 SAND/CEMENT DRY PACK MORTAR. (SEE DET. 428 FOR M.H. STEP.)
   STEPS REQUIRED IN 48" DIAMETER MANHOLE.
   STEPS NOT REQUIRED IN 60" DIAMETER MANHOLE.
3. USE LOW ALKALI CEMENT ONLY.

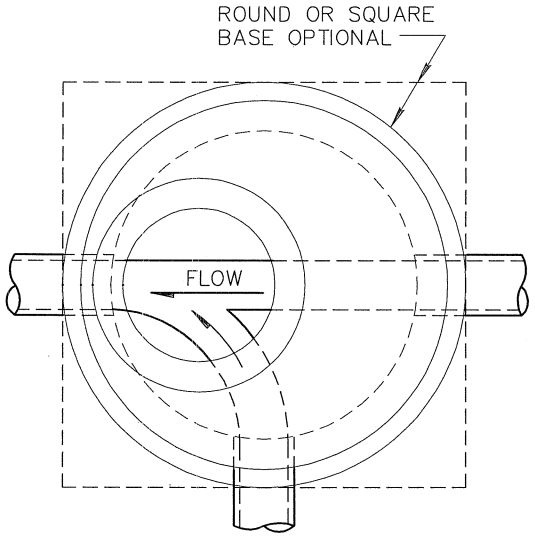
DETAIL NO.			REVISED	DETAIL NO.
420-1	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	PRE-CAST CONCRETE SEWER MANHOLE	01-01-2004	420-1





ADJUSTING RING DETAIL



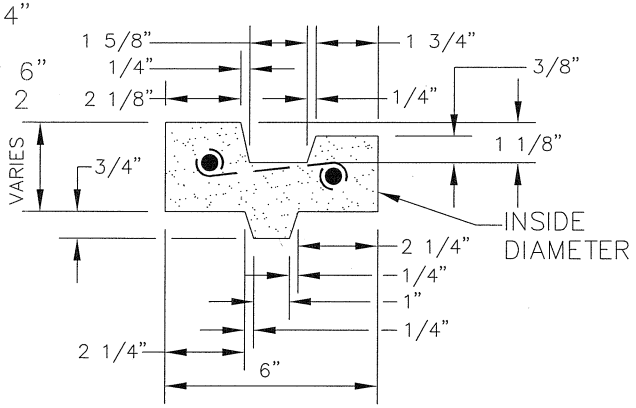


DETAIL NO.				REVISED	DETAIL NO.
420-2	MARICOPA ASSOCIATION of GOVERNMENTS	STANDARD DETAIL ENGLISH	PRE-CAST CONCRETE SEWER MANHOLE	01-01-2001	420-2

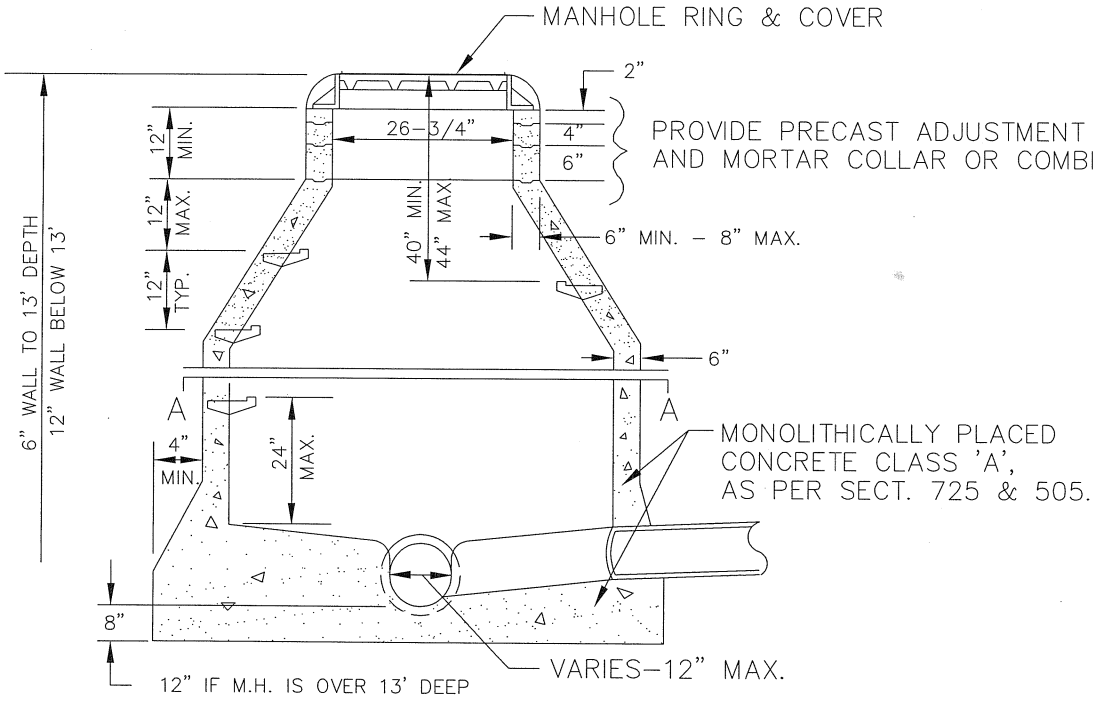
NOTES

PRECAST MANHOLES WHICH HAVE BEEN APPROVED FOR USE BY THE WATER AND SEWER DEPARTMENT, ARE ACCEPTABLE SUBSTITUTES. DIMENSIONS AND MATERIAL SHALL CONFORM TO THE CAST–IN–PLACE DETAIL SHOWN BELOW. INDIVIDUAL UNITS WILL BE INSPECTED AND STAMPED BY THE DIVISION OF FIELD ENGINEERING PRIOR TO DELIVERY TO THE SITE.

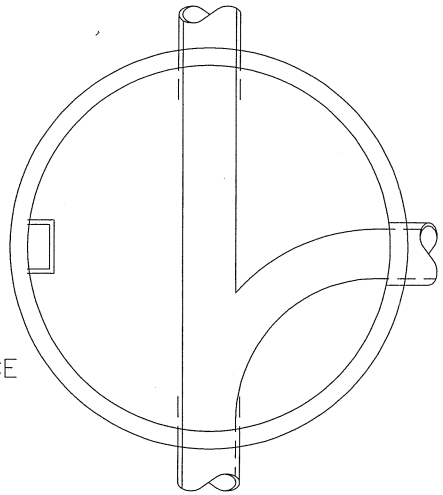
2–NO. 2 HOOPS FOR 4" OR THINNER RING. TIE WITH NO. 4 WIRE. FOR 6" AND OVER USE 4 NO. 2 HOOPS.



ADJUSTING RING DETAIL



C.I. MANHOLE STEPS CAST IN PLACE



SECTION A–A

DETAIL NO. G-3430	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	CONCRETE SANITARY SEWER MANHOLE NON-REINFORCED & PRECAST	DETAIL NO. G-3430

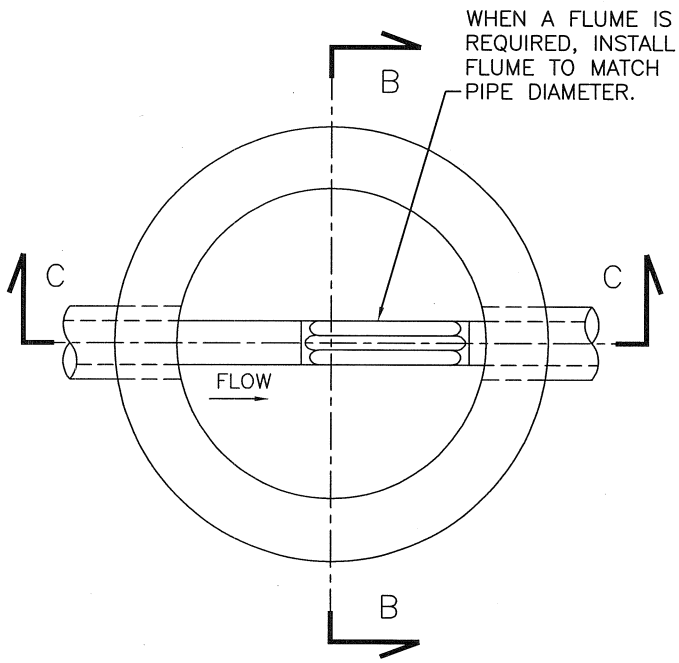
1. THIS CONTROL MANHOLE PLAN SHALL BE USED FOR 6" AND 8" DIAMETER SEWERS AND NOT EXCEED 0.8 CU FT PER SECOND FLOW. LARGER SEWERS REQUIRE SPECIAL DESIGN.

2. ONLY ONE INLET AND OUTLET PIPE SHALL BE CONSTRUCTED THROUGH CONTROL MANHOLE. THE NEAREST JUNCTION BETWEEN THE INLET PIPE AND OTHER CONNECTING SEWERS SHOULD BE LOCATED A MINIMUM OF SIX FEET UPSTREAM.

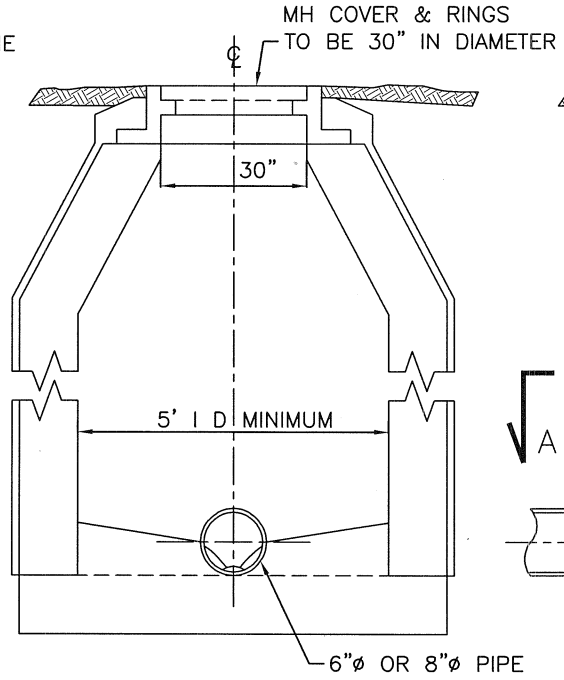
3. CONSTRUCT MANHOLE ON STRAIGHT RUN OF SEWER PIPE. FLOW SHALL BE STRAIGHT THROUGH AS SHOWN.

4. ALL MANHOLE CONSTRUCTION SHALL BE PER MAG DETAIL 420 AND 424 EXCEPT AS REQUIRED ON THIS DETAIL. ECCENTRIC CONICAL TOPS ARE ALLOWABLE.)

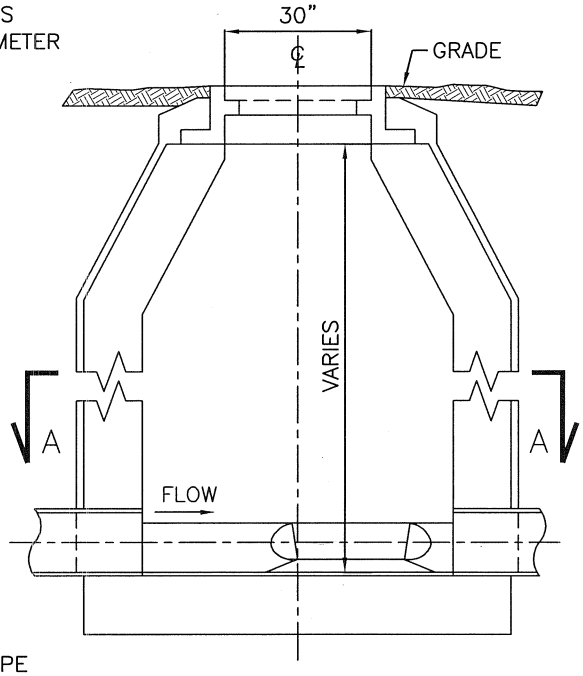
5. WHEN THE INDUSTRIAL WASTE SECTION REQUIRES THE INSTALLATION OF A PRIMARY FLOW MEASUREMENT DEVICE, THE SELECTION OF THE TYPE OF FLUME MUST BE BASED ON THE EXISTING SITE CONFIGURATION, THE NATURE OF THE FLOW, AND THE RANGE OF EXPECTED FLOWS. DOCUMENTATION OF THE METHOD USED TO DETERMINE THE TYPE AND SIZE OF FLUME MUST BE SUBMITTED TO THE INDUSTRIAL WASTE SECTION FOR WRITTEN APPROVAL PRIOR TO CONSTRUCTION.



SECTION A–A



SECTION B–B



SECTION C–C

CONTROL MANHOLE

DETAIL NO. M-35

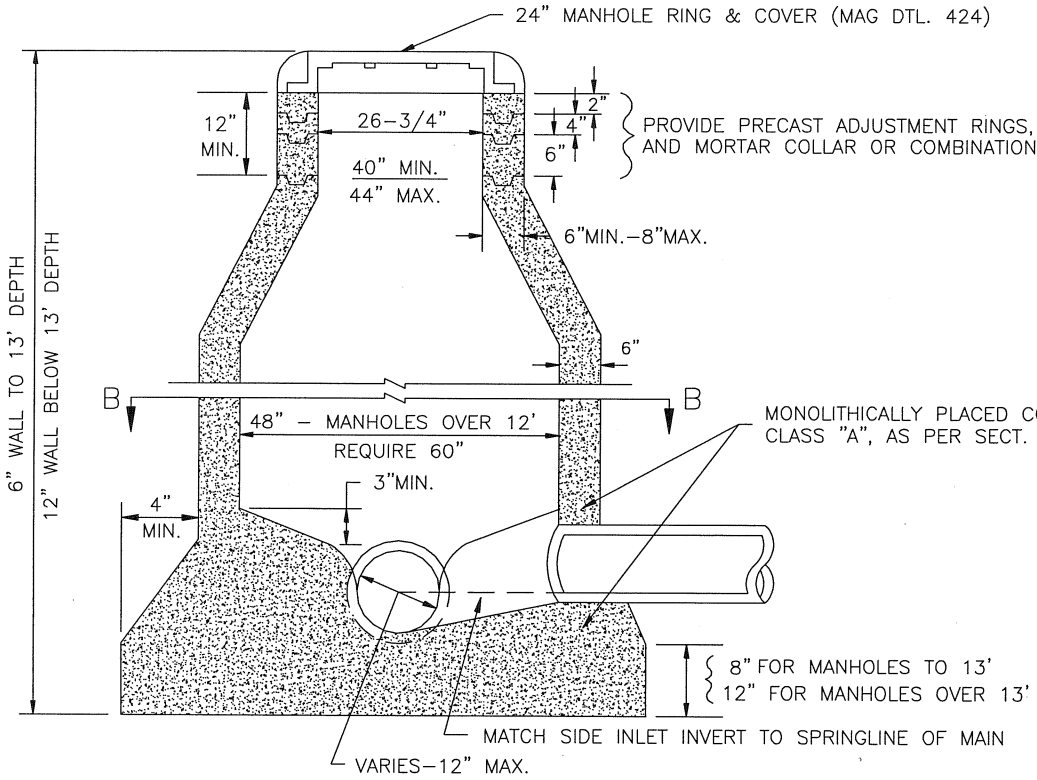
REV. 01/01/02

NOTES:

△ 1. PRECAST MANHOLES WHICH HAVE BEEN APPROVED FOR USE BY THE WATER SERVICES DEPARTMENT, ARE ACCEPTABLE SUBSTITUTES. DIMENSIONS AND MATERIAL SHALL CONFORM TO THE CAST-IN-PLACE DETAIL SHOWN BELOW. INDIVIDUAL UNITS WILL BE INSPECTED AND STAMPED BY STREET TRANSPORTATION/MATERIALS SECTION PRIOR TO DELIVERY TO THE SITE.

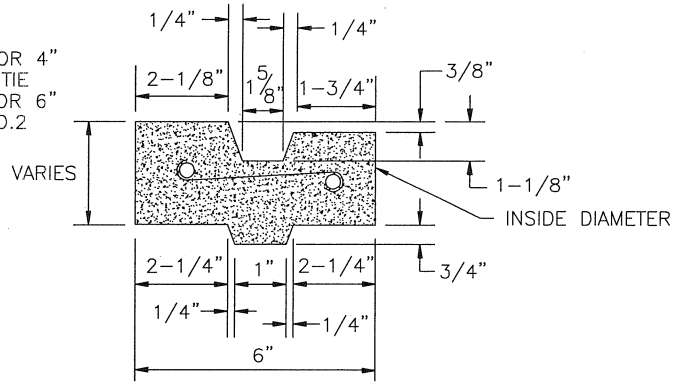
2. FOR ANY PIPES GREATER THAN 12" USE MAG DETAILS, 420-427.

3. MANHOLES WITH 60" DIAMETER AND PIPES GREATER THAN 12" REQUIRE COATING PER C.O.P. SUPPLEMENT 625.

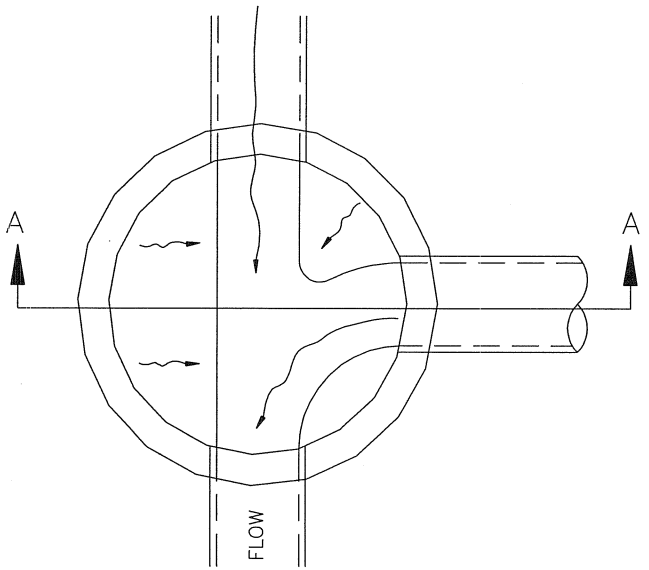


SECTION A-A
NO SCALE

2 - NO.2 HOOPS FOR 4" OR THINNER RING. TIE WITH NO.4 WIRE. FOR 6" AND OVER USE 4 NO.2 HOOPS.

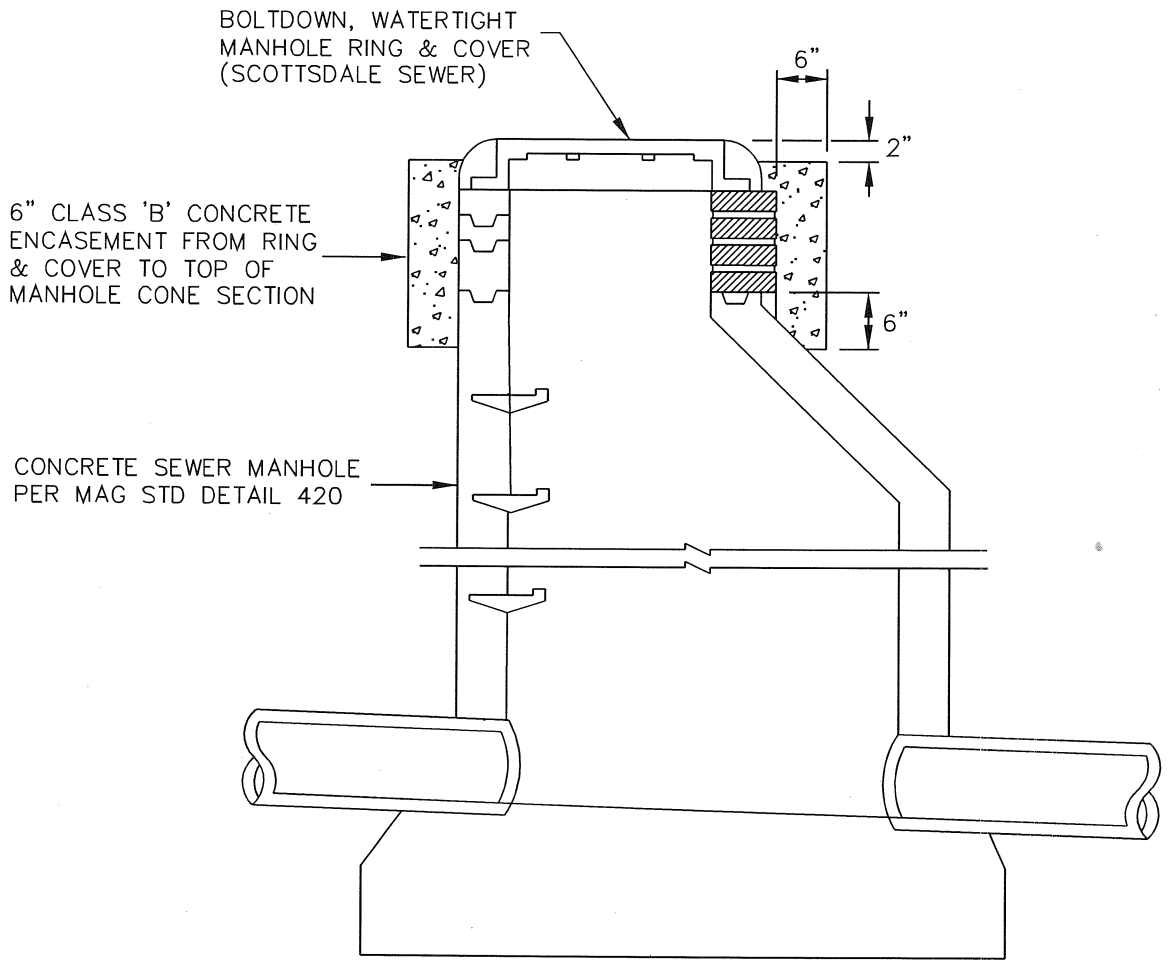


ADJUSTING RING

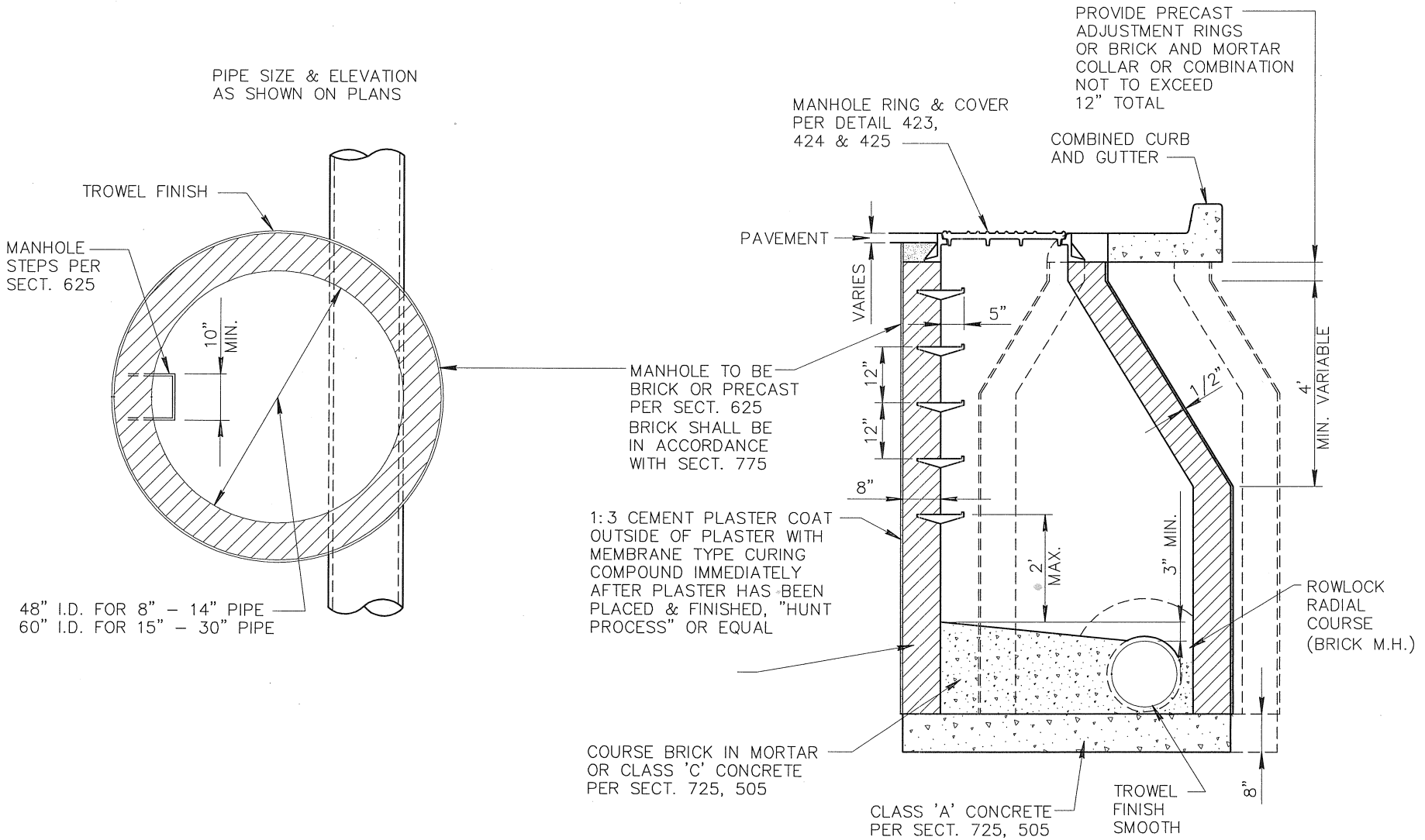


SECTION B-B

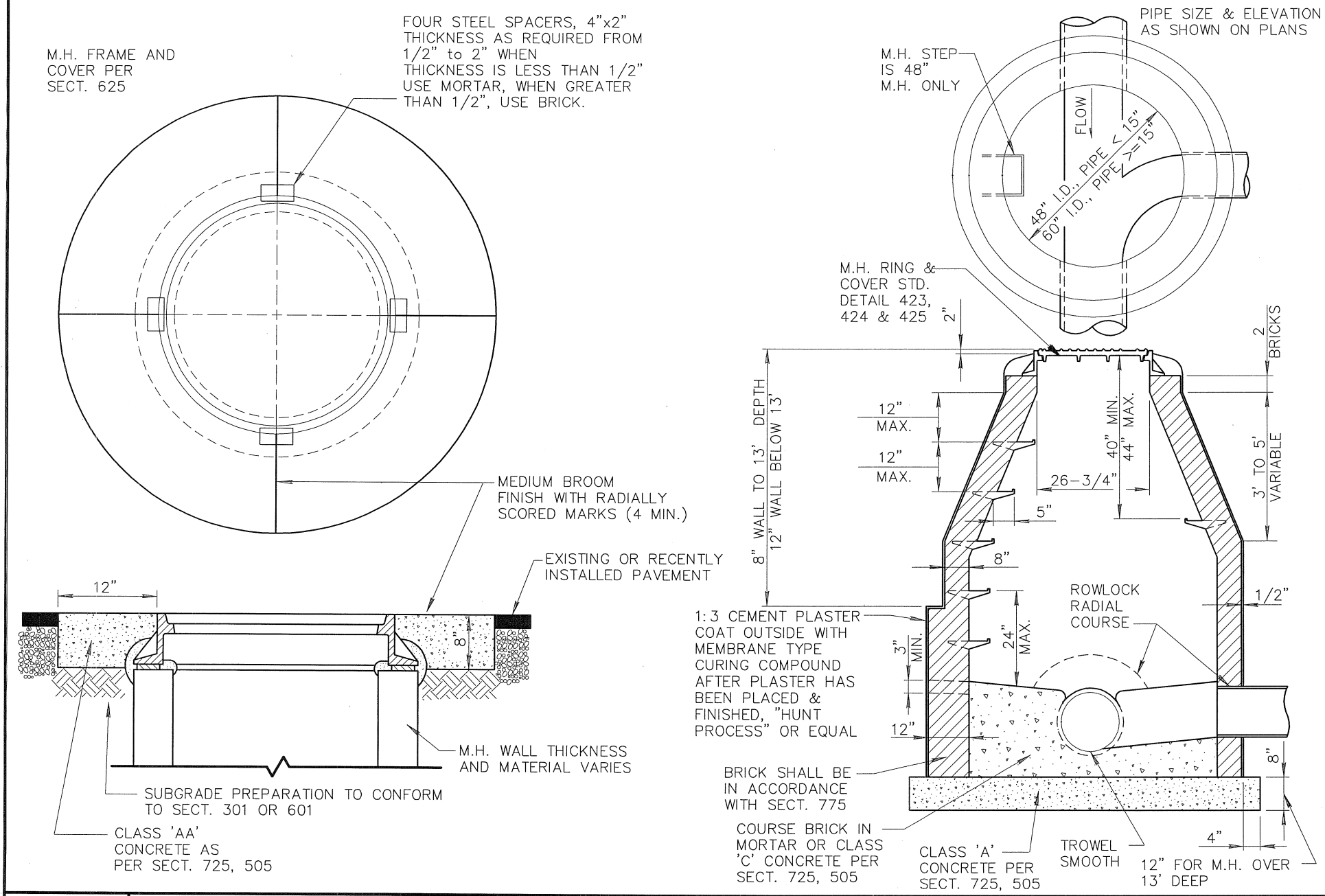
DETAIL NO.					
P1430	City of Phoenix STANDARD DETAIL	CONCRETE SANITARY SEWER MANHOLE NON-REINFORCED CAST-IN-PLACE & PRECAST	APPROVED CITY ENGINEER 6-27-01 DATE		DETAIL NO. P1430



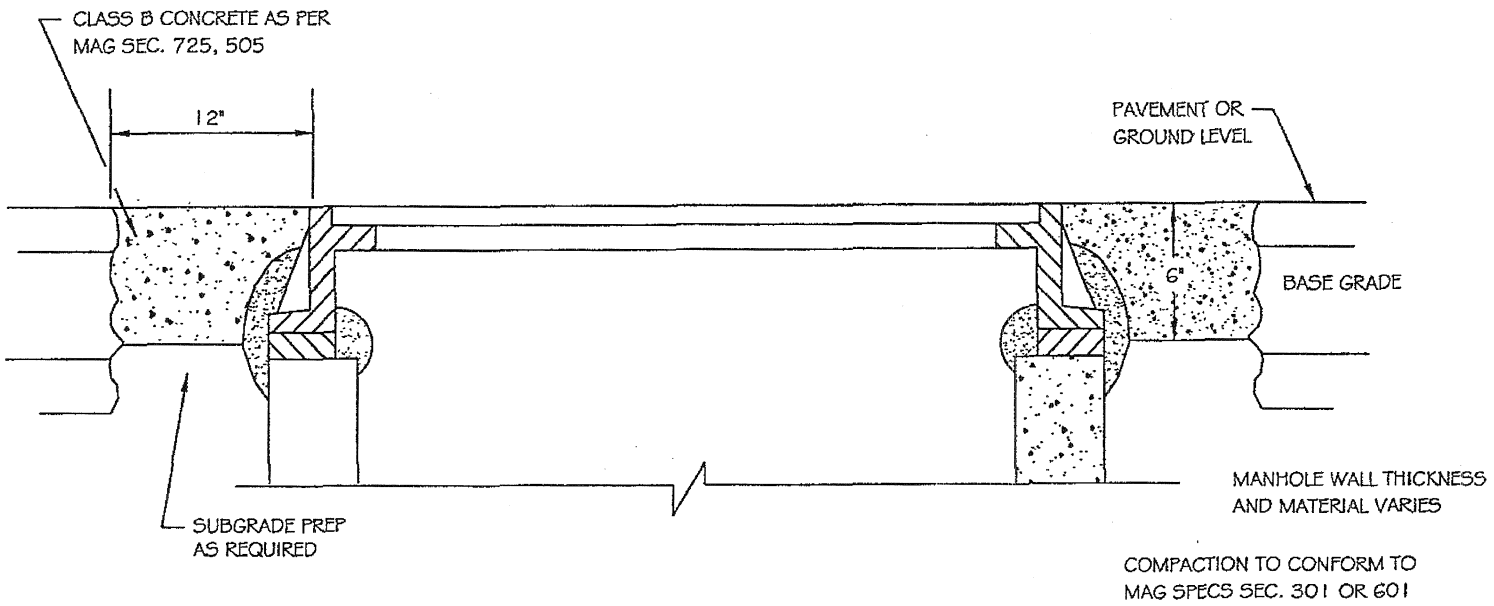
DETAIL NO. 2420	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	WATER TIGHT CONCRETE SEWER MANHOLE	DETAIL NO. 2420



DETAIL NO.			REVISED	DETAIL NO.
421	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**OFFSET MANHOLE 8" TO 30" PIPE**		421



DETAIL NO.			REVISED	DETAIL NO.
422	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	BRICK SEWER MANHOLE AND COVER FRAME ADJUSTMENT	01-01-2001	422



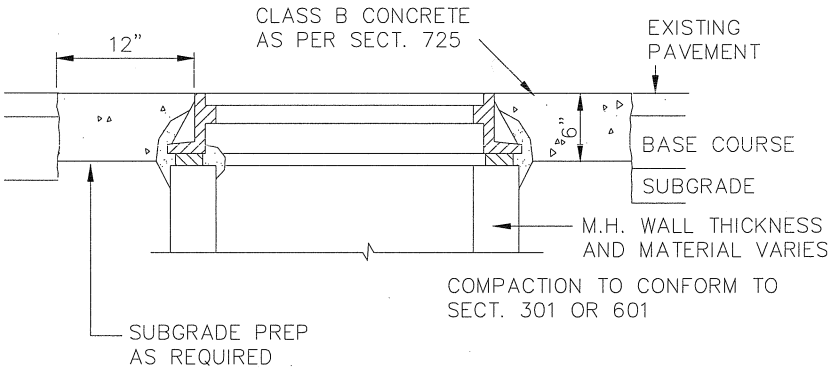
C-401 **REPLACES** **52C**	CITY OF CHANDLER STANDARD DETAIL	**MANHOLE** **CONCRETE COLLAR DETAIL**	APPROVED: Bryan D. Patterson CITY ENGINEER DATE: 11-19-99	DETAIL NO. **C-401** NTS

PEORIA DETAIL 422

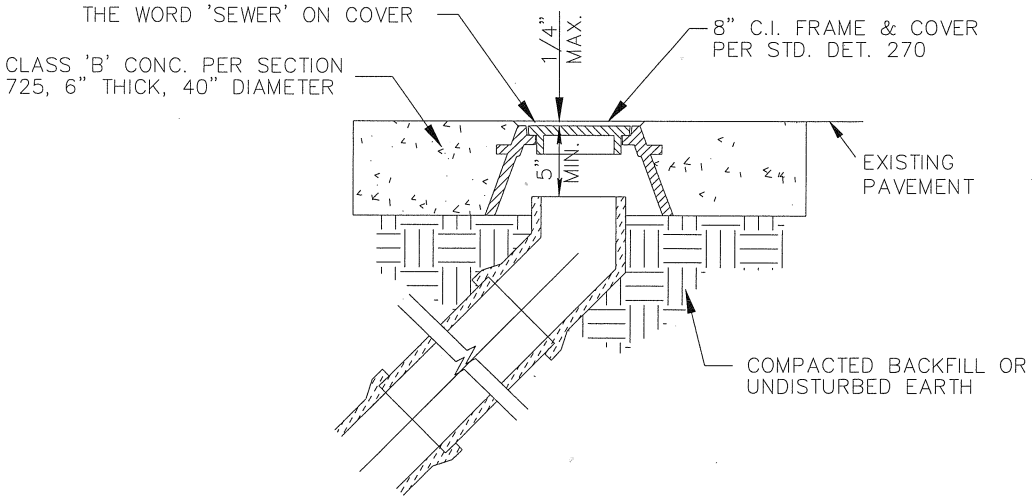
SEWER MANHOLE AND CLEANOUT ADJUSTMENTS

APPROVALS:

CITY ENGINEER DATE



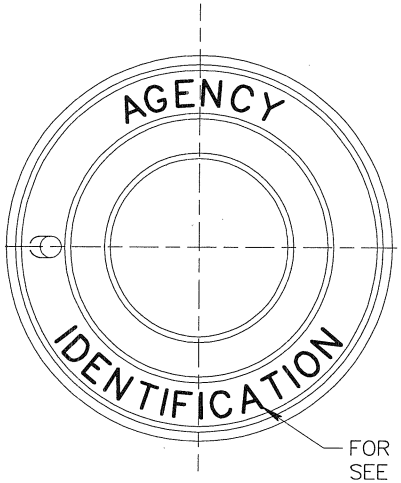
MANHOLE



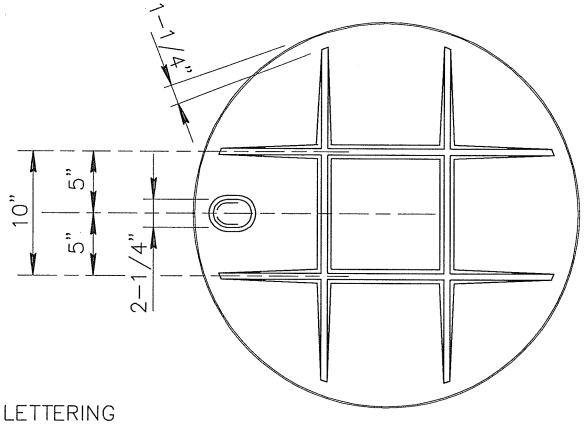
CLEANOUT

I:\GUIDE\DETAILS\422.DWG

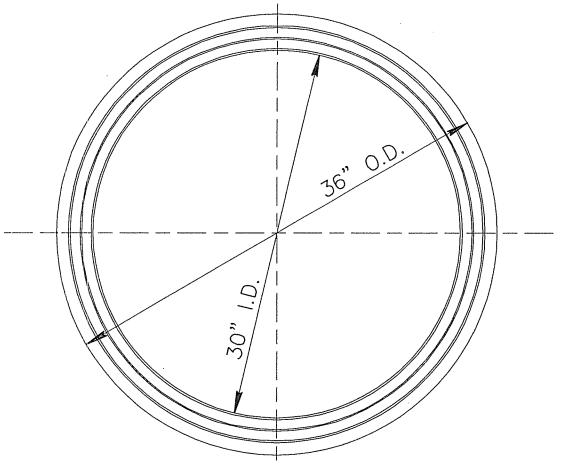
07/16/98



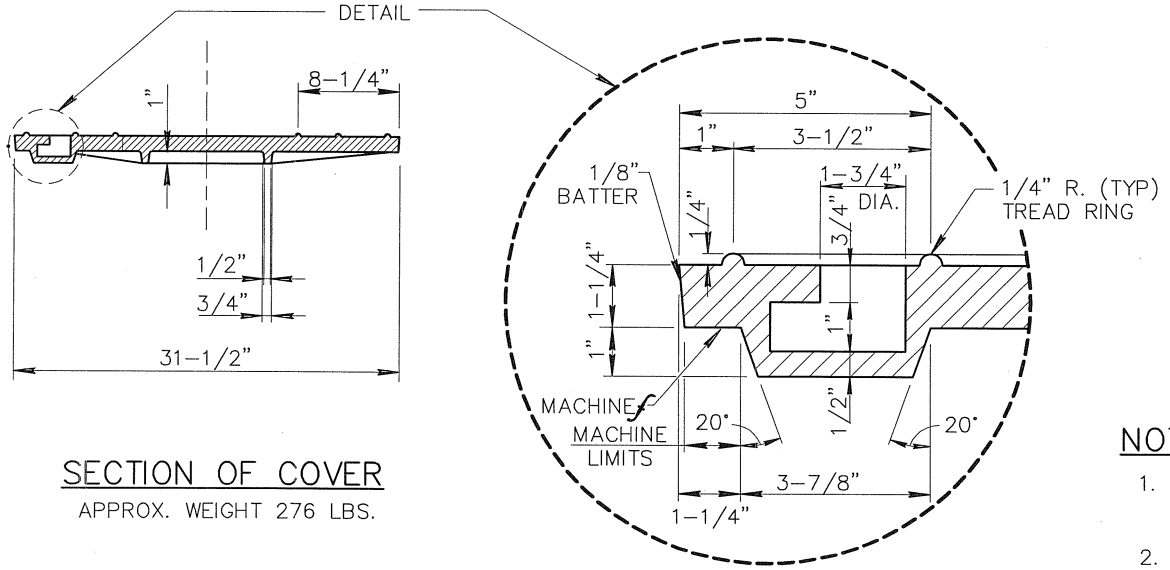
FACE OF COVER
CAST IRON



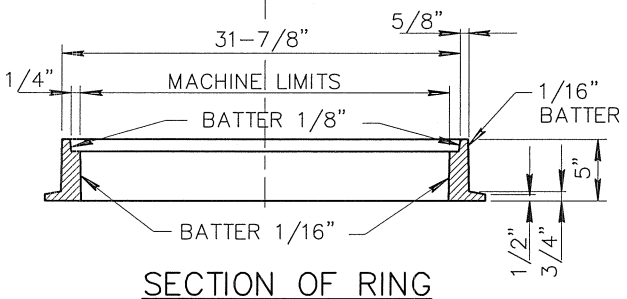
BACK OF COVER



CAST IRON
MANHOLE RING



SECTION OF COVER
APPROX. WEIGHT 276 LBS.

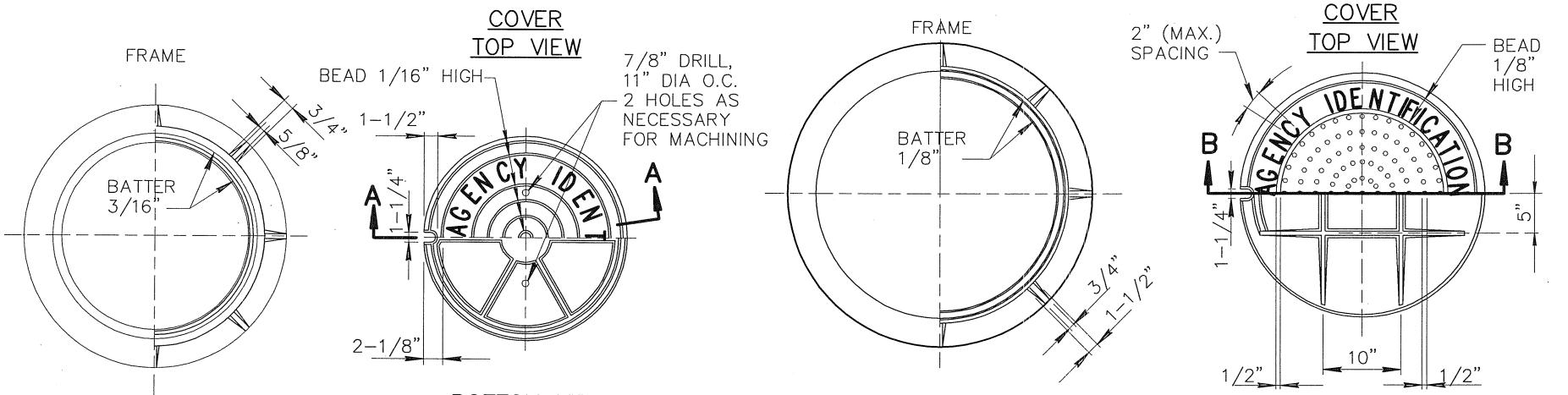


SECTION OF RING
APPROX. WEIGHT 210 LBS.

NOTES:

1. WEIGHT OF CASTING SHALL BE NO MORE THAN 2% LESS THAN THE APPROXIMATE WEIGHT SPECIFIED.
2. CASTINGS SHALL CONFORM TO SECT. 787.

DETAIL NO.			REVISED	DETAIL NO.
423	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	WATER TIGHT 30" MANHOLE FRAME AND COVER		423



BOTTOM VIEW – TOP VIEW
WT. (CL. 30) – 205 LBS
WT. (CL. 35) – 170 LBS

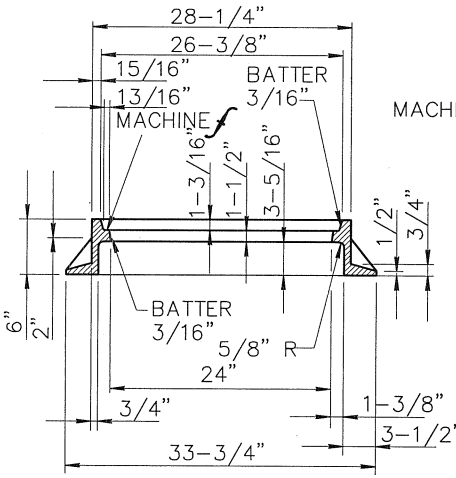
BOTTOM VIEW
WT. (CL. 30) – 200 LBS
WT. (CL. 35) – 180 LBS

24" MANHOLE FRAME AND COVER

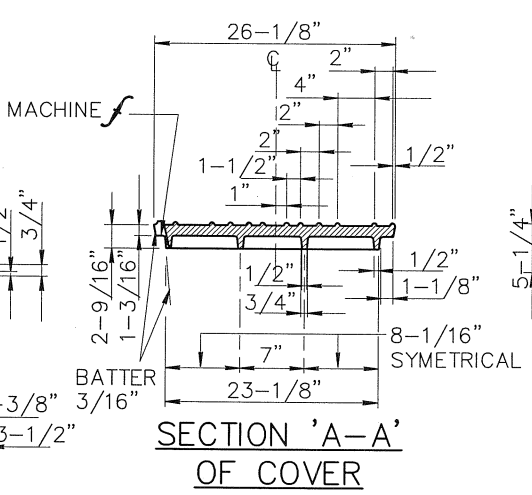
BOTTOM VIEW – TOP VIEW
WT. (CL. 30) – 224 LBS
WT. (CL. 35) – 219 LBS

BOTTOM VIEW
WT. (CL. 30) – 324 LBS
WT. (CL. 35) – 207 LBS

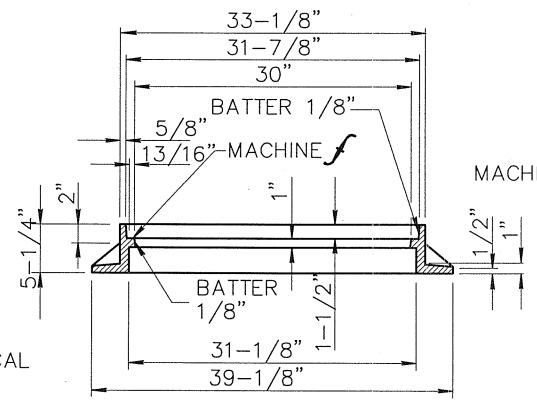
30" MANHOLE FRAME AND COVER



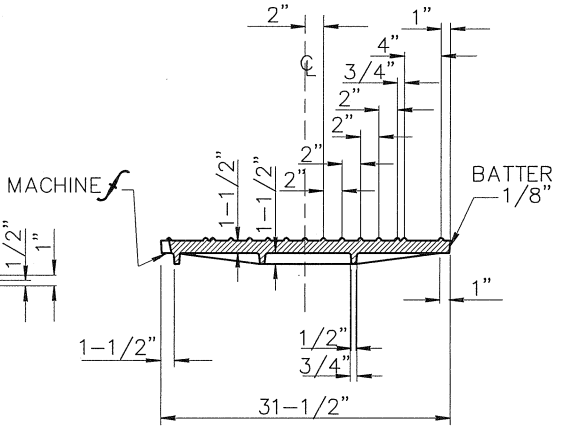
SECTION OF FRAME



SECTION 'A–A' OF COVER



SECTION OF FRAME

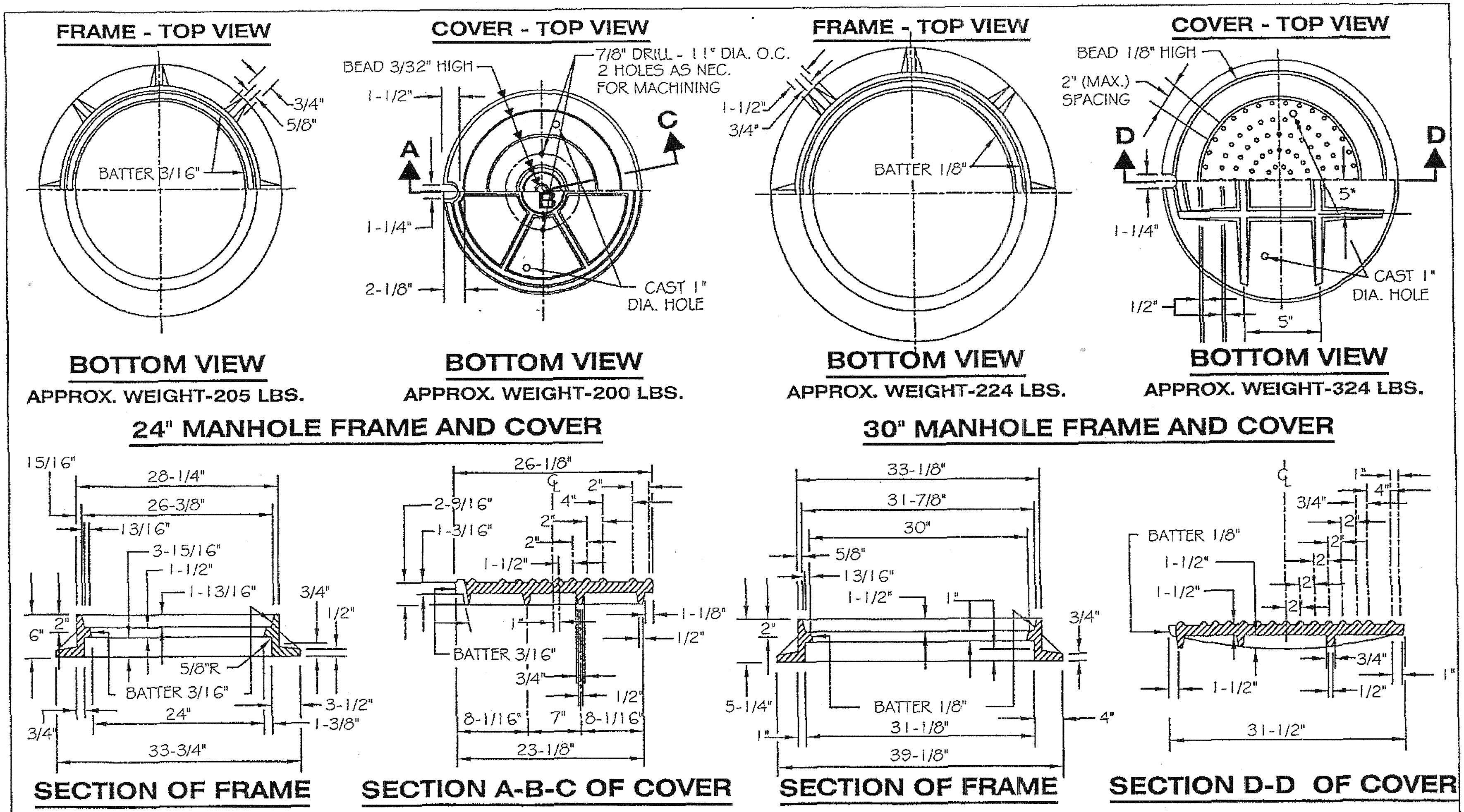


SECTION 'B–B' OF COVER

NOTE:

LETTERING ON MANHOLE COVER TO CONTAIN NAME OF AGENCY AND UTILITY FOR WHICH MANHOLE IS NEEDED, (I.E. "PHOENIX SANITARY SEWER"), OR AS DIRECTED. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED TO FORM A COMPLETE CIRCLE WITH SPACERS BEFORE AND AFTER THE WORD IDENTIFYING THE AGENCY INVOLVED. LETTERS TO BE 2" IN HEIGHT AND RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL. WEIGHT OF CASTINGS SHALL BE NO MORE THAN 2% LESS THAN THE APPROXIMATE WEIGHT SPECIFIED. CASTINGS SHALL CONFORM TO SECTION 787.

DETAIL NO.			REVISED	DETAIL NO.
424	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	24" AND 30" MANHOLE FRAME AND COVER		424



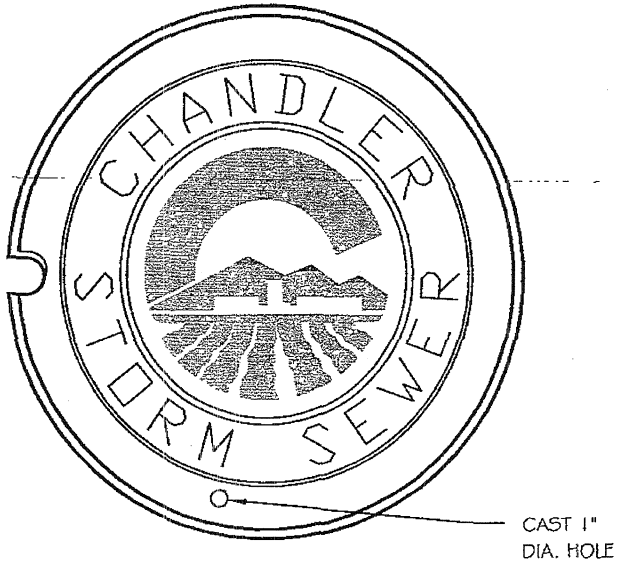
NOTE:

1 WEIGHT OF CASTING SHALL BE NO MORE THAN 2% LESS THAN THE APPROXIMATE WEIGHT SPECIFIED. CASTING SHALL CONFORM TO MAG STANDARD SPECIFICATIONS 787.
2. SEE C-400 PAGE 2 FOR MANHOLE COVER DETAIL.

C-400 REPLACES 99	CITY OF CHANDLER STANDARD DETAIL	24" AND 30" MANHOLE FRAME AND COVER	APPROVED: [signature] CITY ENGINEER DATE: January 11, 2002	DETAIL NO. C-400 PAGE 1 OF 2

COVER - TOP VIEW
SANITARY SEWER

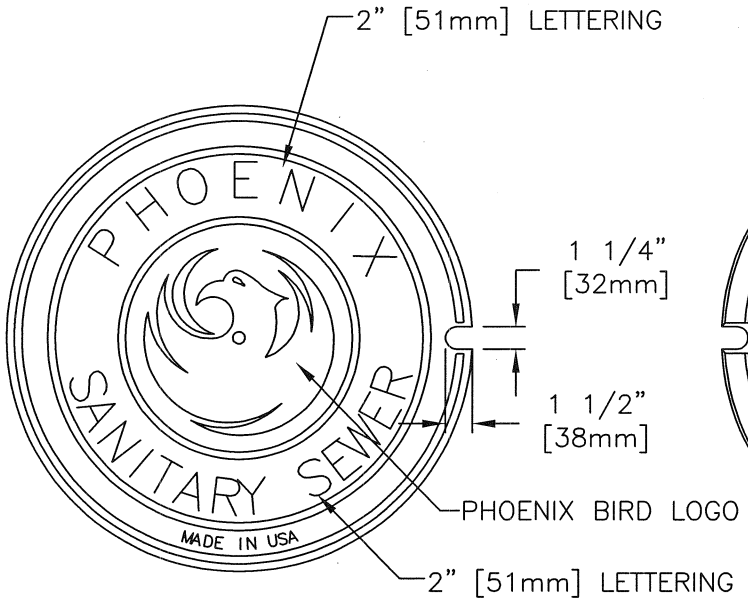
COVER - TOP VIEW
STORM SEWER



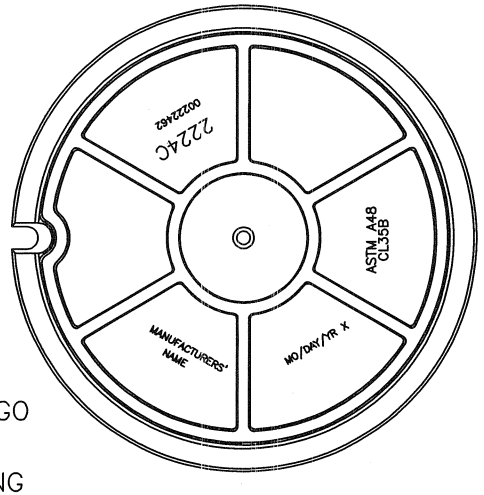
NOTE:

LETTERING ON MANHOLE COVER TO CONTAIN UTILITY FOR WHICH MANHOLE IS NEEDED, ("CHANDLER SANITARY SEWER" OR, "CHANDLER STORM SEWER"), OR AS DIRECTED. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED TO FORM A COMPLETE CIRCLE WITH SPACERS BEFORE AND AFTER THE WORD. LETTERS TO BE 1" IN HEIGHT AND RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.

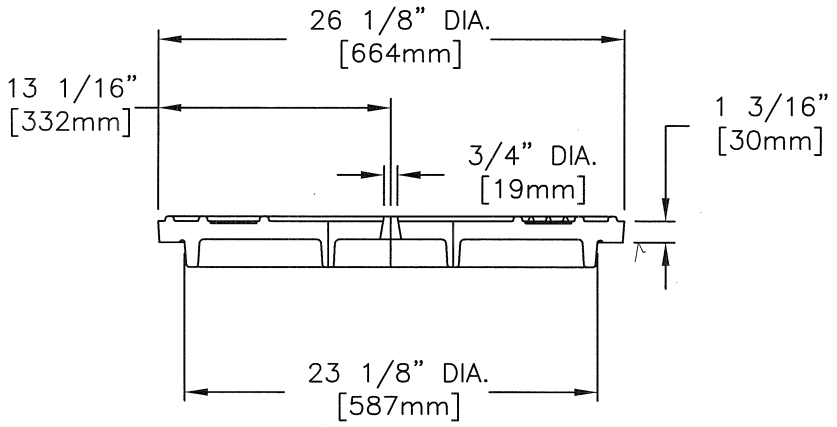
C-400 **REPLACES** **99**	CITY OF CHANDLER STANDARD DETAIL	**MANHOLE COVER**	APPROVED: Elizabeth W. Adams CITY ENGINEER DATE: January 11, 2002	DETAIL NO. **C-400** PAGE 2 OF 2



PLAN VIEW



BOTTOM VIEW

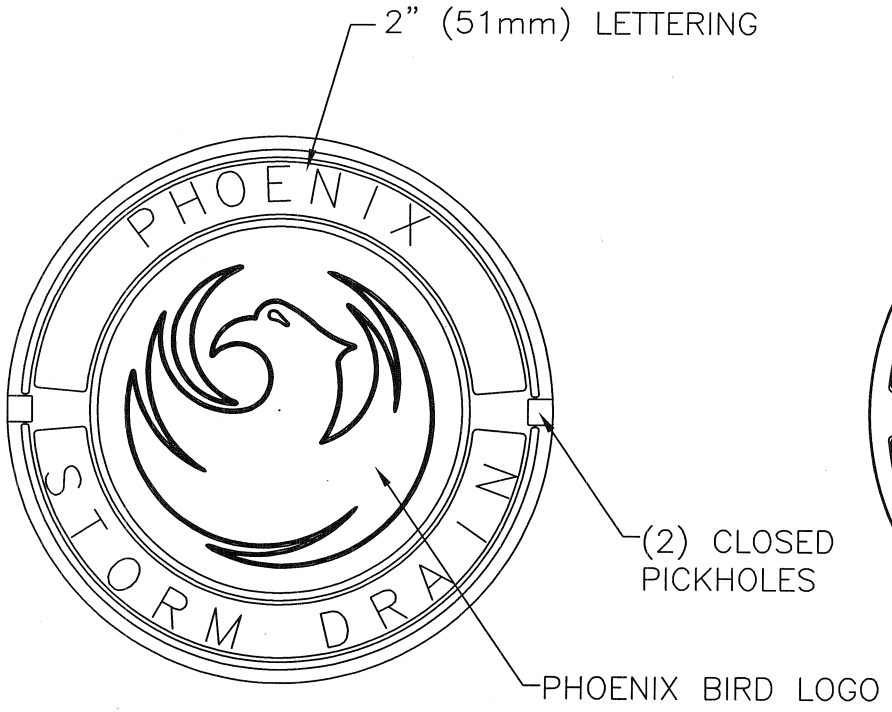


SECTION VIEW

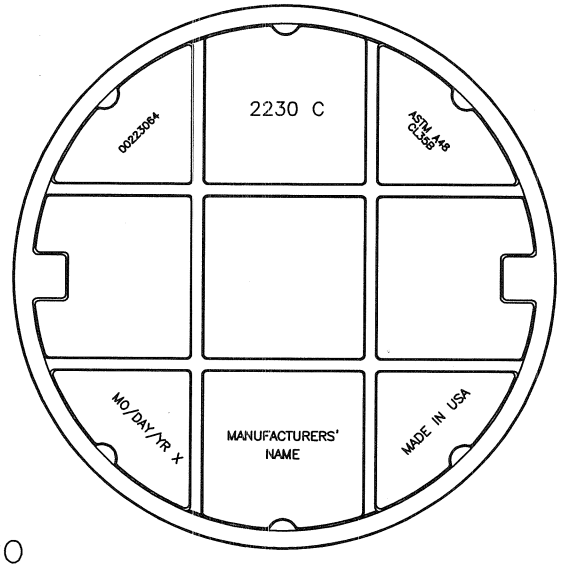
NOTES:

Surface of Manhole Cover to be machined.

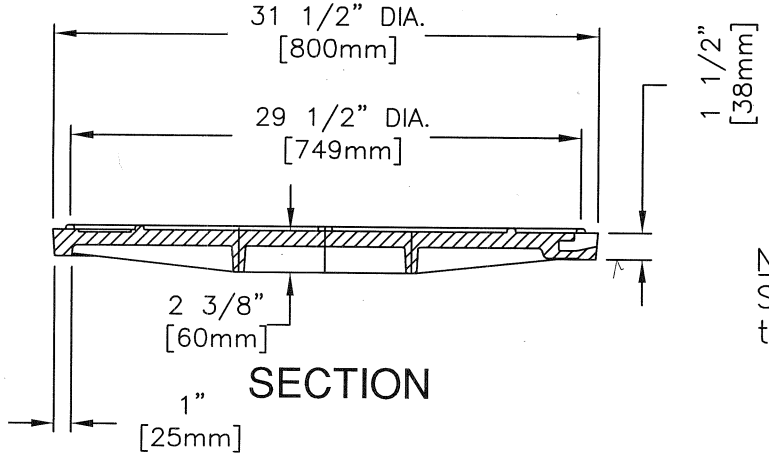
DETAIL NO.				DETAIL NO.
P1424	**City of Phoenix STANDARD DETAIL**	MANHOLE COVER 24"	APPROVED Mario Saldamando CITY ENGINEER — 08-08-03 DATE	P1424



PLAN VIEW

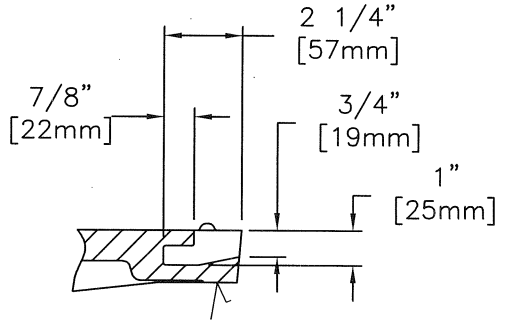


BOTTOM VIEW



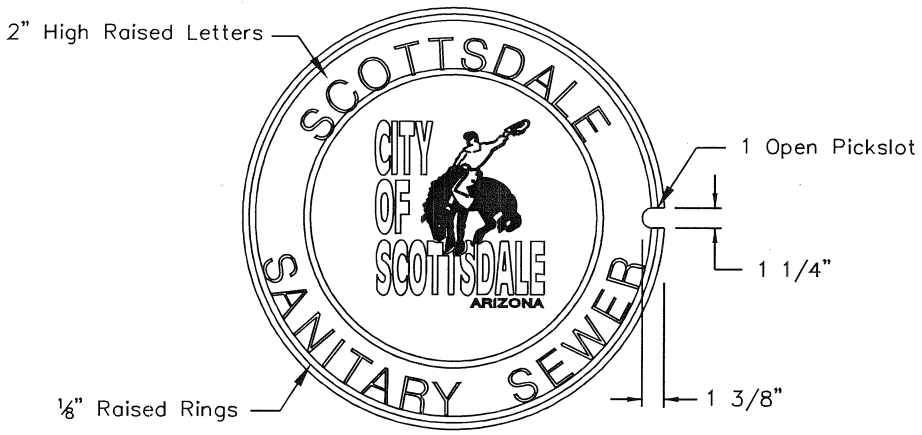
SECTION

NOTES:
Surface of Manhole Cover to be machined.

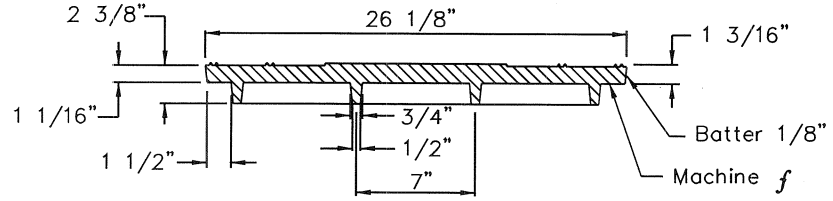


PICKHOLE DETAIL

DETAIL NO.				DETAIL NO.
P1424-1	**City of Phoenix STANDARD DETAIL**	MANHOLE COVER 30"	APPROVED Mario Saldamando CITY ENGINEER — 08-08-03 DATE	P1424-1

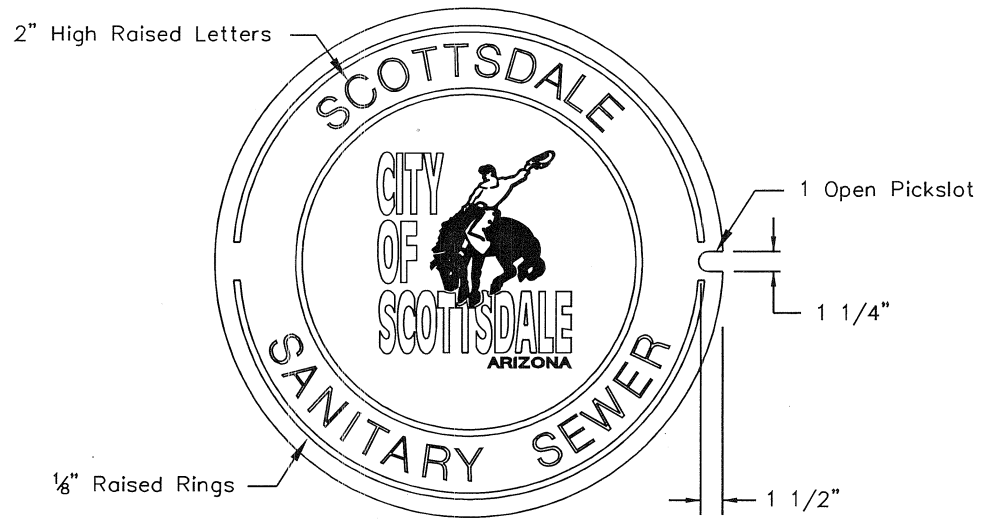


TOP VIEW

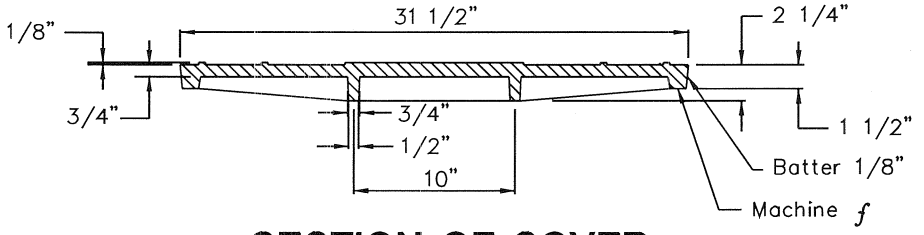


SECTION OF COVER

24" MANHOLE COVER



TOP VIEW



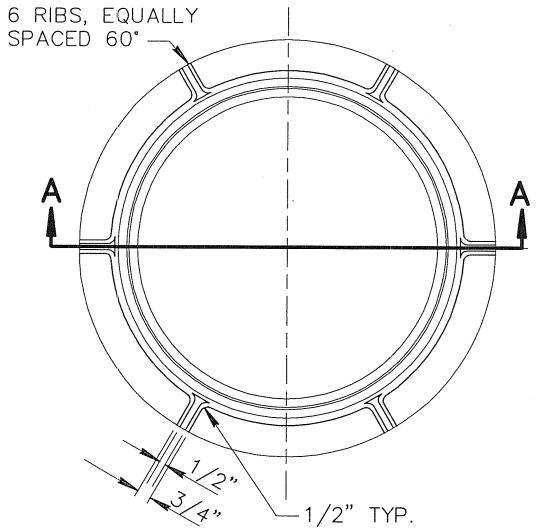
SECTION OF COVER

30" MANHOLE COVER

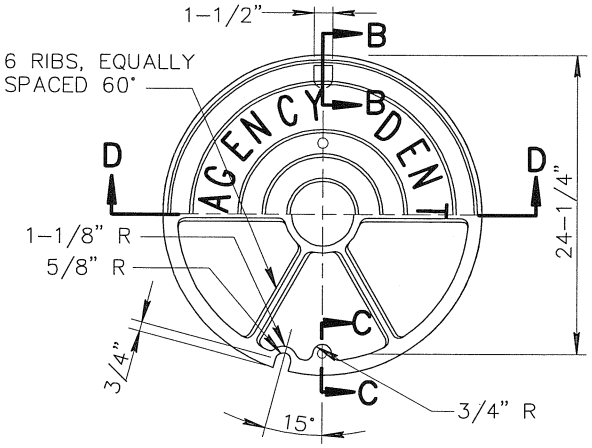
NOTES

1. Material: Cast Gray Iron ASTM A-48, Class 35B, Unpainted
2. The Total Width Of Individual Letters To Be Such That Letters And Words Are Equally Spaced And Balanced.
3. Letters To Be 2" In Height And Raised 1/8" Above Level Of Cover. Type Of Letters To Be Submitted For Approval.
4. Weight Of Castings Shall Be No More Than 2% Less Than Weight Specified. Castings Shall Conform To M.A.G. Section 787.

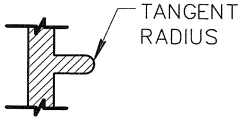
DETAIL NO. 2421	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	SANITARY SEWER MANHOLE COVER	DETAIL NO. 2421



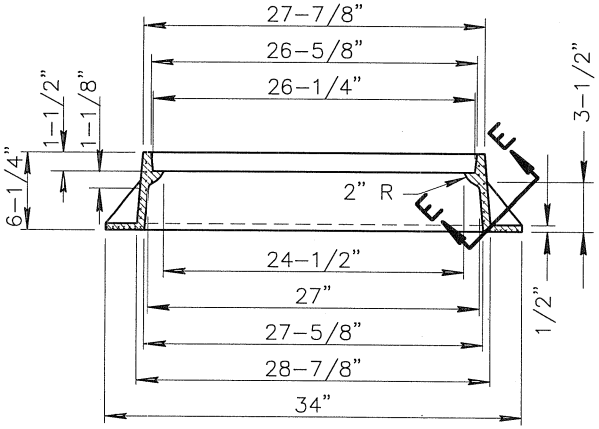
TOP VIEW



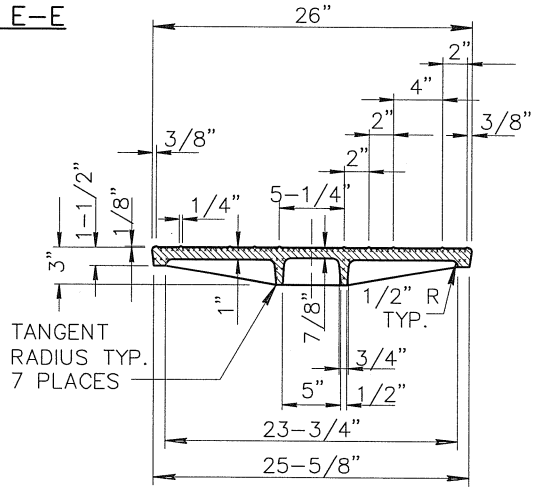
BOTTOM VIEW



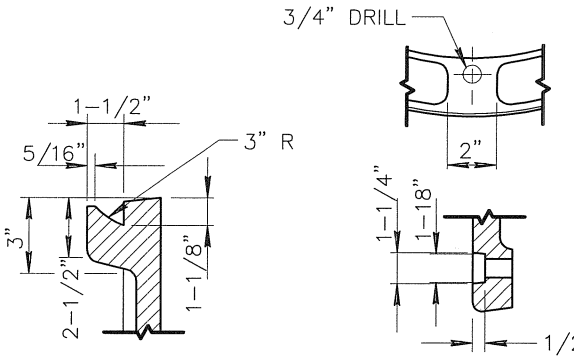
SECTION E-E



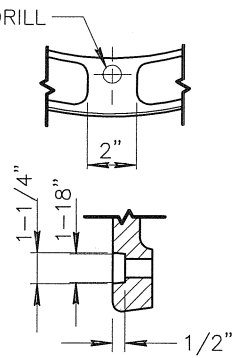
SECTION 'A-A'



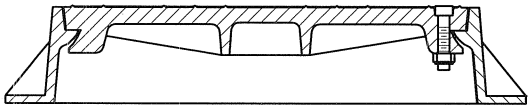
SECTION 'D-D'



SECTION 'B-B'



SECTION 'C-C'

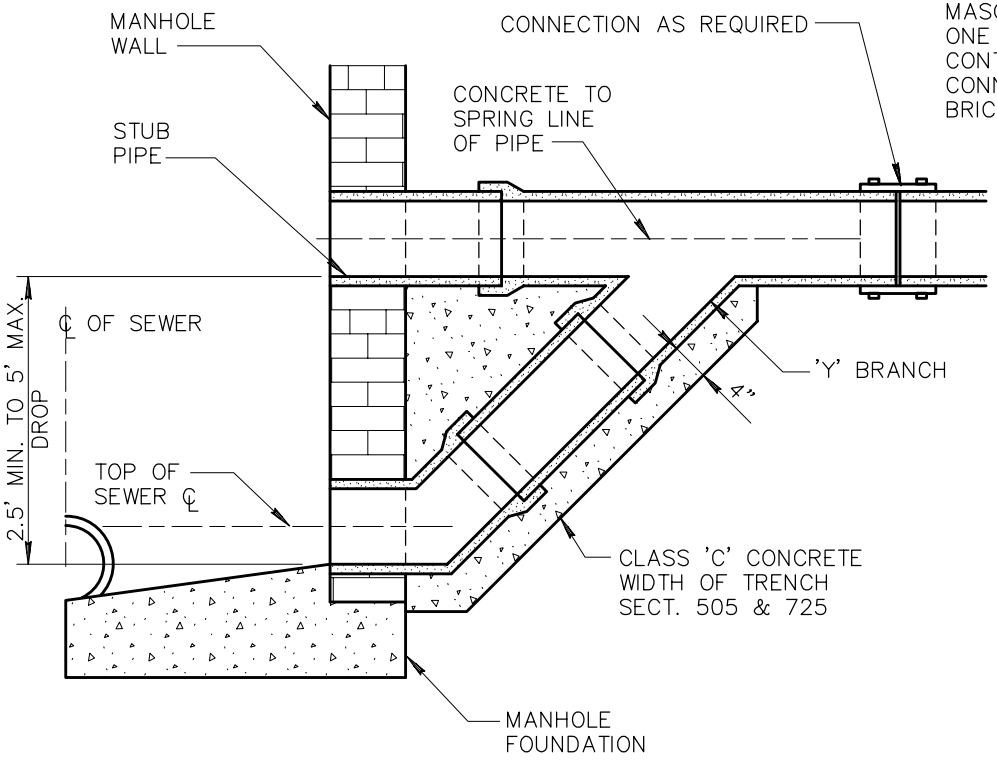


SECTION VIEW OF FRAME AND COVER WITH CAM LOCKING DEVICE

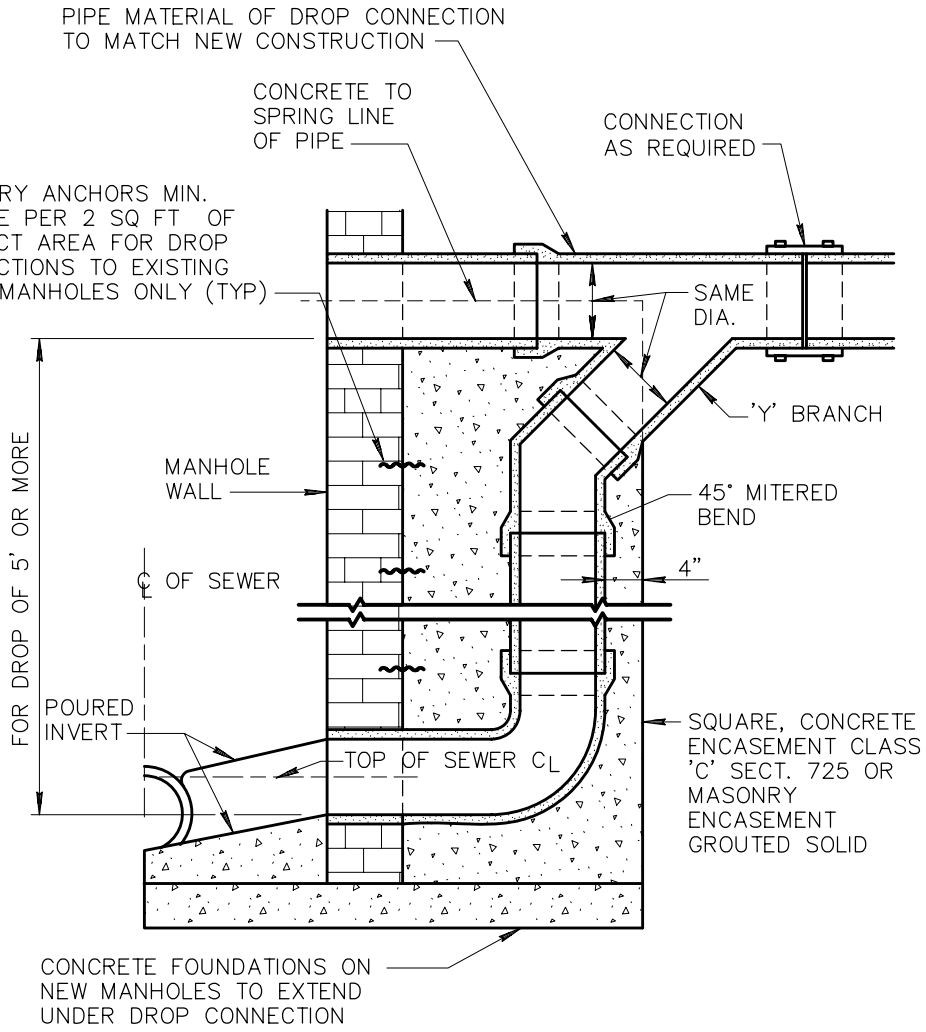
NOTES:

1. MATERIAL SHALL CONFORM TO A.S.T.M. STANDARDS
   B 179-65 ALLOY SN122A
   B 179-65 ALLOY CN42A
   B 108-65 ALLOY SC103A
   (ALL 3 ACCEPTABLE)
2. LETTERING ON MANHOLE COVER TO CONTAIN NAME OF AGENCY AND UTILITY FOR WHICH MANHOLE IS NEEDED. (I.E. "PHOENIX SANITARY SEWER"), OR AS DIRECTED. THE TOTAL WIDTH OF INDIVIDUAL LETTERS TO BE SUCH THAT LETTERS AND WORDS ARE EQUALLY SPACED AND BALANCED TO FORM A COMPLETE CIRCLE WITH SPACERS BEFORE AND AFTER THE WORD IDENTIFYING THE AGENCY INVOLVED. LETTERS TO BE 2" RAISED 1/8" ABOVE LEVEL OF COVER. TYPE OF LETTERS TO BE SUBMITTED FOR APPROVAL.
3. WEIGHT OF CASTINGS SHALL BE NO MORE THAN 2% LESS THAN THE APPROXIMATE WEIGHT SPECIFIED.
4. CASTINGS SHALL CONFORM TO SECT. 787.
5. SHALL CONFORM TO SECT. 625.3.1 – (FRAME AND COVER).

DETAIL NO.			REVISED	DETAIL NO.
425	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**24" ALUMINUM MANHOLE FRAME AND COVER**		425

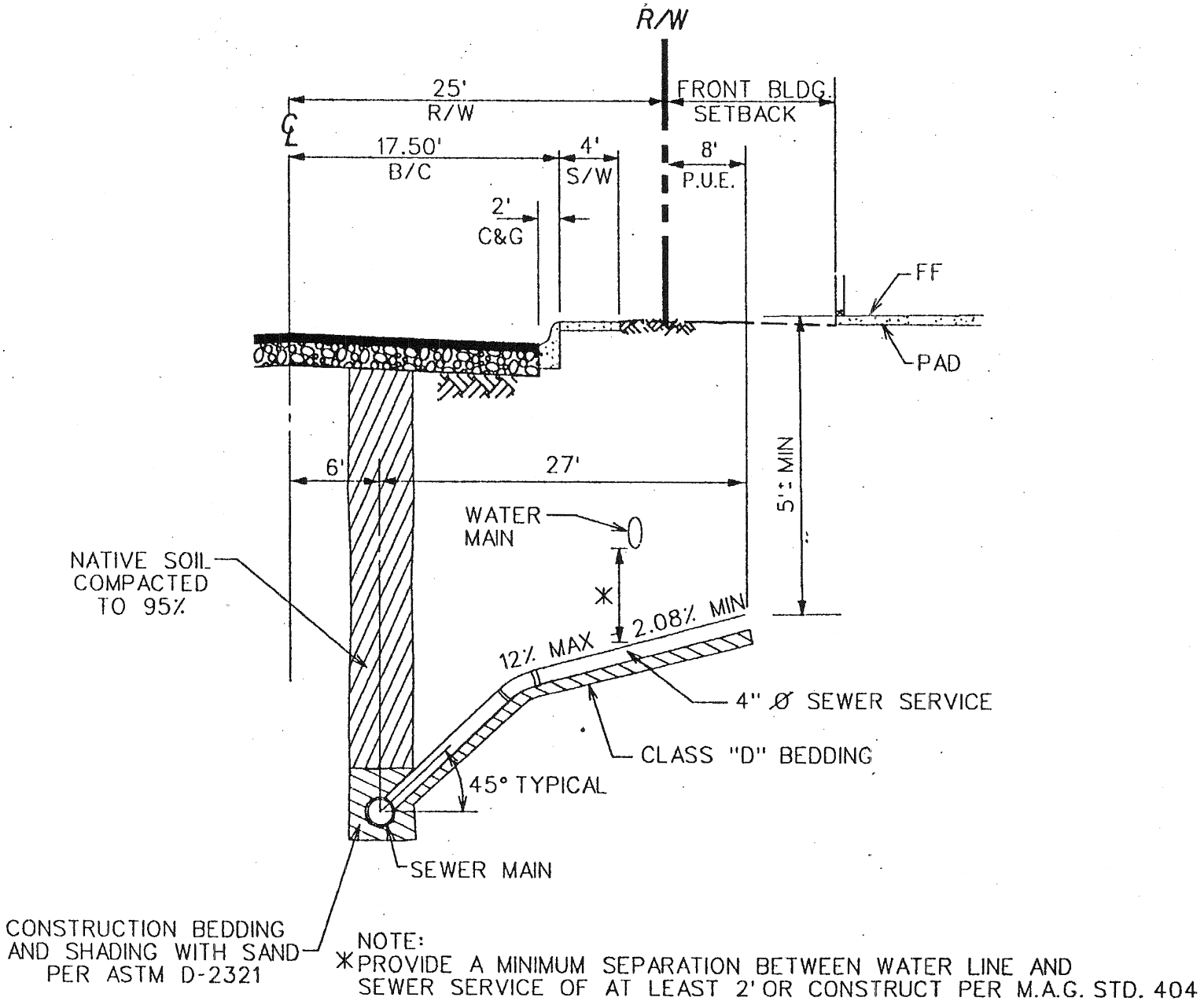


TYPE A
2.5' TO 5' DROP



TYPE B
5' OR MORE

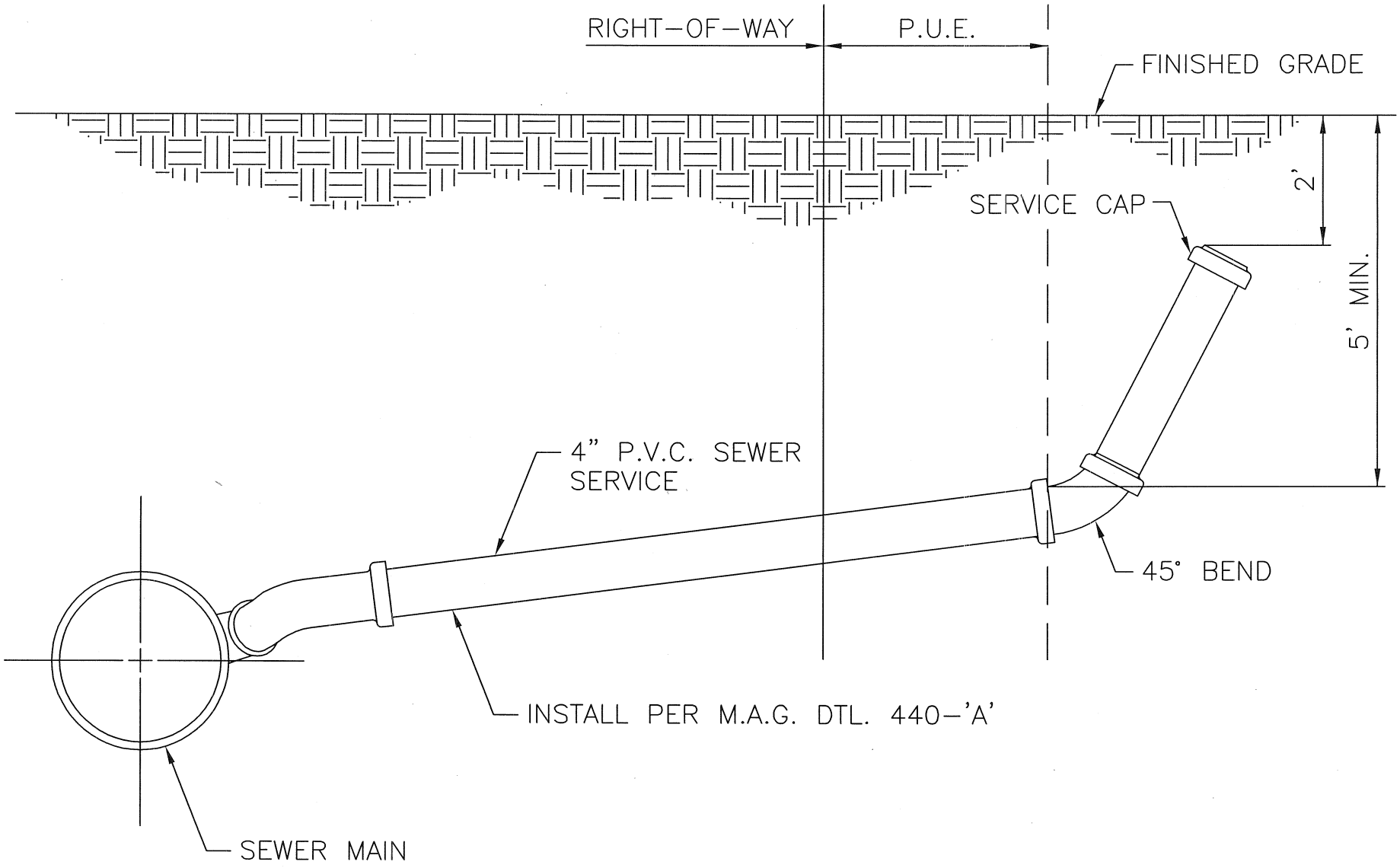
DETAIL NO.			REVISED	DETAIL NO.
426	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	DROP SEWER CONNECTIONS	01-01-2007	426



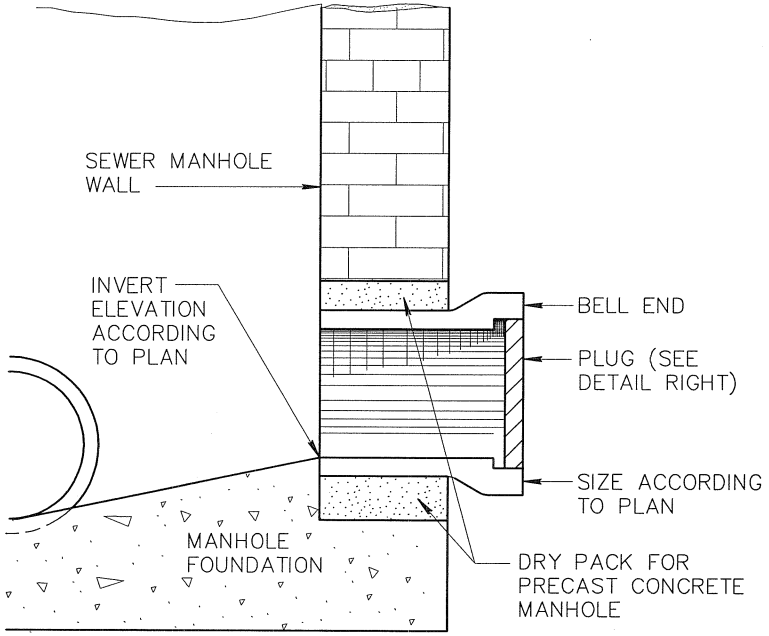
NOTE:
* PROVIDE A MINIMUM SEPARATION BETWEEN WATER LINE AND SEWER SERVICE OF AT LEAST 2' OR CONSTRUCT PER M.A.G. STD. 404

TYPICAL SEWER SERVICE FOR SEWER MAINS ≥ 10' DEEP

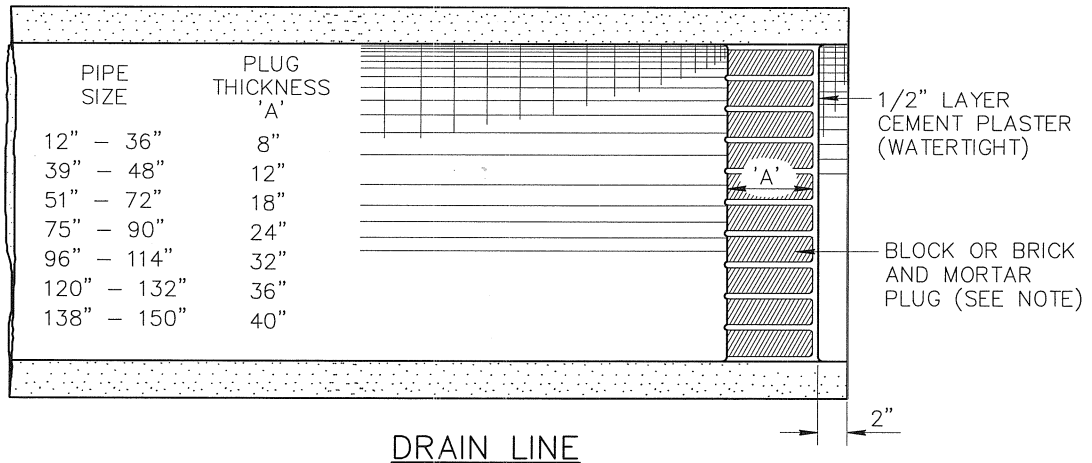
NTS



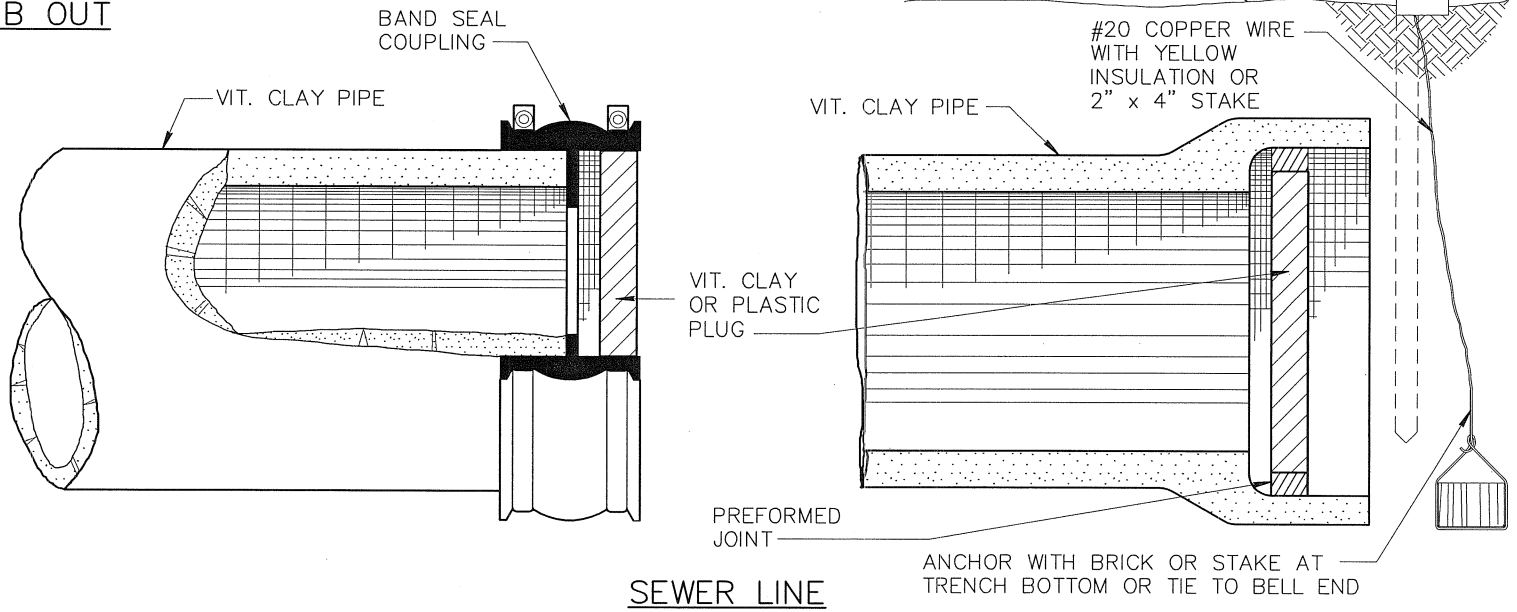
DETAIL NO. 64	TOWN OF GILBERT STANDARD DETAIL	4" SEWER SERVICE INSTALLATION	REVISED 01/2005	DETAIL NO. 64



TYPICAL STUB OUT



DRAIN LINE

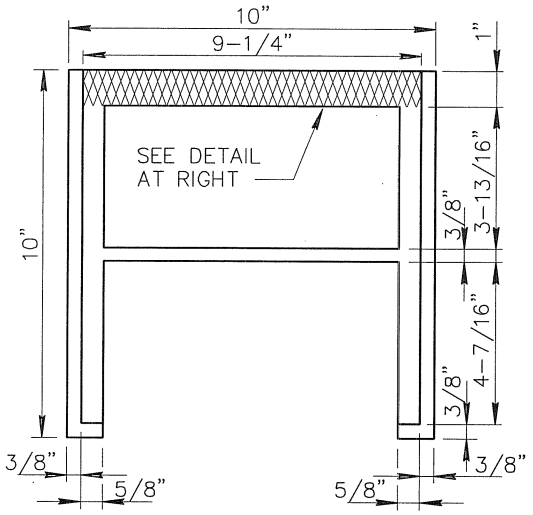


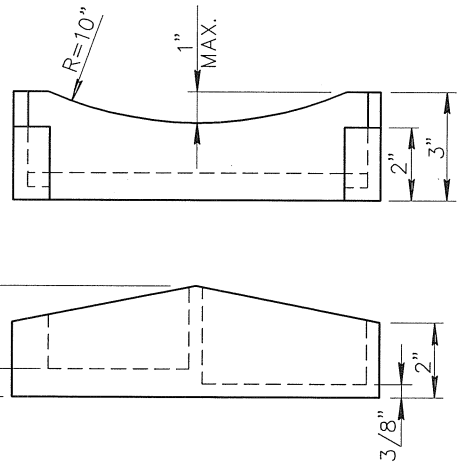
SEWER LINE

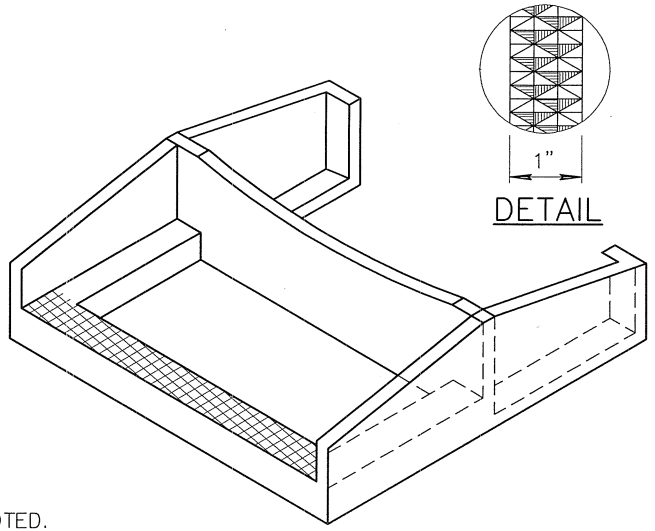
NOTES:

1. NOTE: COMPACT SOIL AT END OF PIPE TO 95% OF MAXIMUM DENSITY.
2. IF DEPTH OF COVER IS LESS THAN 5' OR GREATER THAN 10' INCREASE PLUG THICKNESS A MIN. OF 4".

DETAIL NO.			REVISED	DETAIL NO.
427	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	STUB OUT AND PLUGS		427



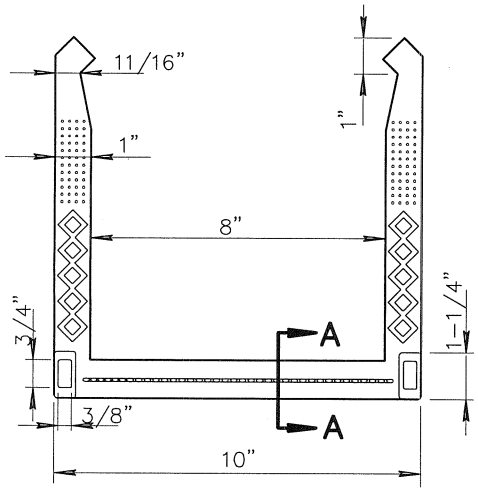


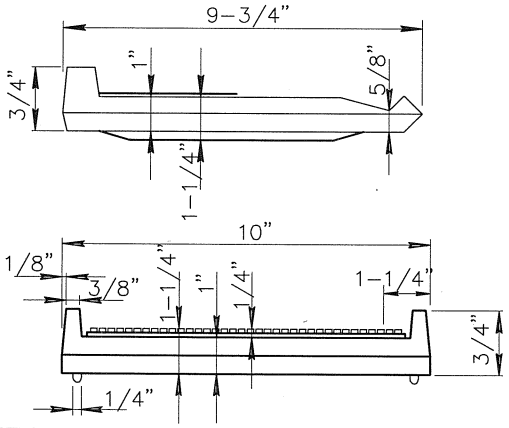


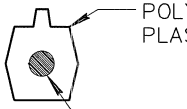
NOTES

1. ALL DIMENSIONS ARE MINIMUM EXCEPT WHERE NOTED.
2. CASTING AS PER SECT. 787.

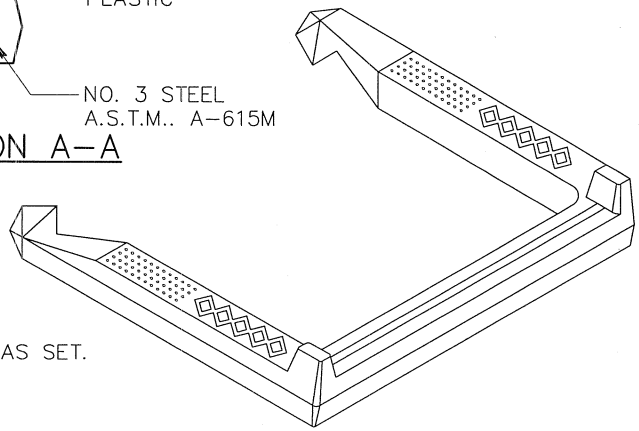
CAST IRON MANHOLE STEP







SECTION A-A

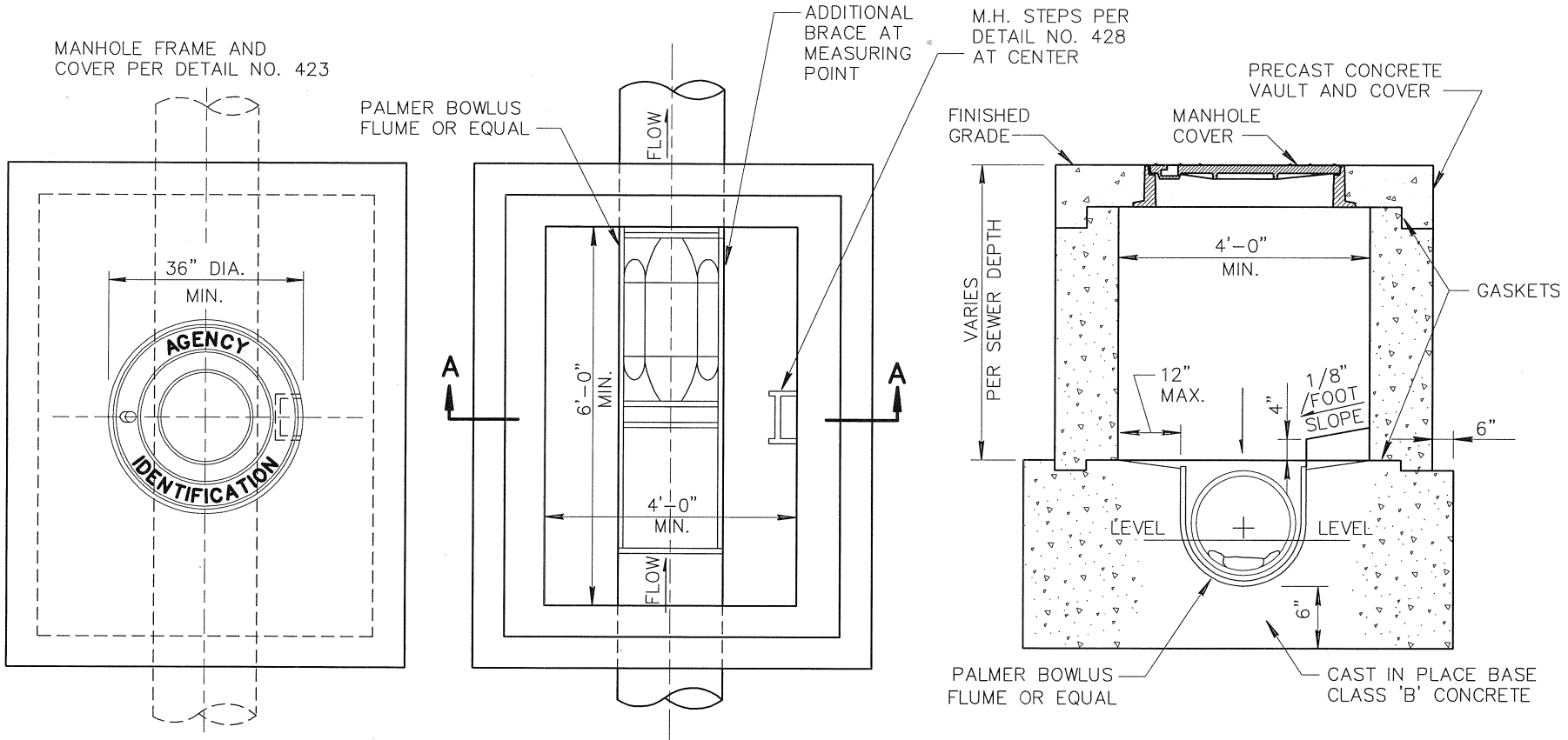


NOTES

1. STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET.
2. POLYPROPYLENE MUST MEET REQUIREMENTS OF A.S.T.M. 2146, TYPE II, GRADE 16906.

POLYPROPYLENE MANHOLE STEP

DETAIL NO.			REVISED	DETAIL NO.
428	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	MANHOLE STEPS		428



MANHOLE & COVER SLAB

PLAN VIEW

NOTE: WITH COVER REMOVED.

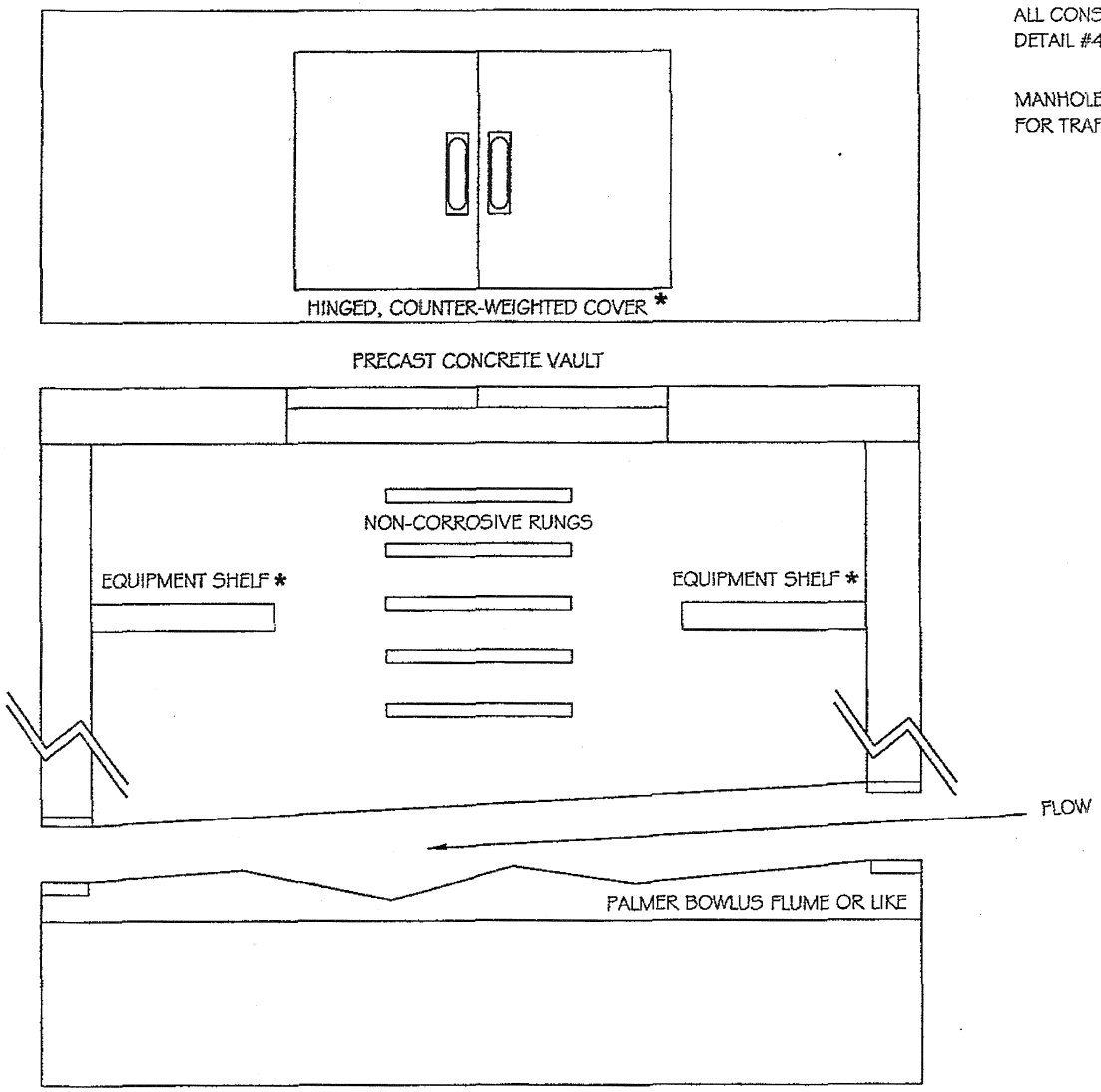
SECTION A–A

NOTE: LADDER NOT SHOWN IN SECTION VIEW.
SECTION SHOWN WITH COVER IN PLACE.

NOTES:

1. THIS CONTROL VAULT WITH MANHOLE AND COVER SHALL BE USED ON 6" AND 8" DIAMETER SEWER WITH FLOWS IN THE RANGE OF 40 TO 340 GPM.
2. VAULT TO BE CONSTRUCTED ON STRAIGHT RUN OF BUILDING SEWER. ACCESSIBLE AND SAFELY LOCATED ON THE OWNERS PROPERTY ADJACENT TO A PUBLIC RIGHT–OF–WAY.
3. THE PALMER BOWLUS FLUME SHALL BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.
4. THE PRE–CAST CONCRETE VAULT SHALL BE RECTANGULAR WITH MINIMUM INSIDE DIMENSIONS OF 4" WIDE AND 6" LONG AND AT A DEPTH OF THE DESIGN OF THE BUILDING SEWER.
5. A SHOP DRAWING SHALL BE SUBMITTED TO THE CONTRACTING AGENCY FOR APPROVAL BEFORE INSTALLATION OF THE VAULT AND THE PALMER BOWLUS FLUME WILL BE ALLOWED.

DETAIL NO.			REVISED	DETAIL NO.
429	MARICOPA ASSOCIATION of GOVERNMENTS **STANDARD DETAIL ENGLISH**	**INDUSTRIAL WASTE CONTROL VAULT WITH MANHOLE**		429



ALL CONSTRUCTION TO CONFORM TO MAG STANDARD DETAIL #429 EXCEPT WHERE NOTED

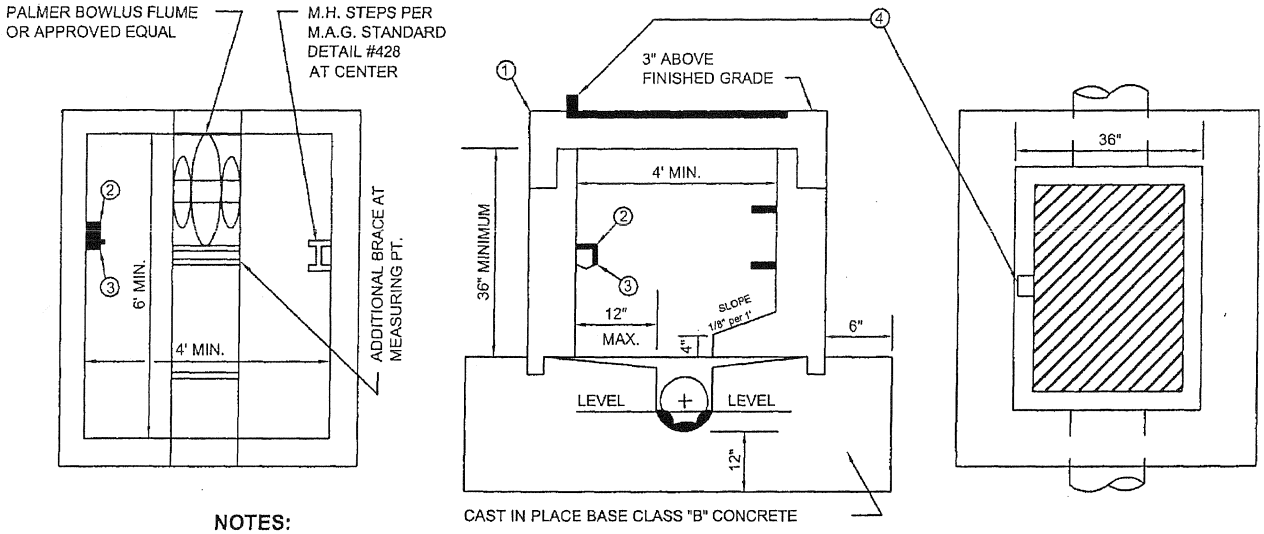
MANHOLE FRAME AND COVER PER MAG STANDARD DETAIL #423 FOR TRAFFIC AREAS

DETAIL NO. C-403 NTS	CITY OF CHANDLER STANDARD DETAIL	**INDUSTRIAL WASTE SAMPLING MANHOLE**	APPROVED: Bryan D. Patterson CITY ENGINEER DATE: 11-19-99	DETAIL NO. C-403 NTS

STANDARD DETAIL G-740

CITY OF GLENDALE
ENGINEERING

CONTROL SAMPLING VAULT



NOTES:

1. MINIMUM INSIDE DIMENSIONS SHALL BE 4' X 6', WITH A MINIMUM INSIDE HEIGHT OF 36" FROM TOP OF FLUME. ANY ALTERATIONS TO THESE REQUIREMENTS WILL BE REVIEWED ON A CASE BY CASE BASIS BY THE DIVISION.
2. ACCESS TO VAULT MUST BE A BILCO STYLE DOOR WITH A FACTORY INSTALLED LOCKING MECHANISM AND A MIMINUM INSIDE OPENING DIAMETER OF 29". LOAD SPECIFICATIONS OF DOOR REVIEWED DEPENDING ON LOCATION OF THE VAULT.
3. VAULT SHALL BE CONSTRUCTED ON A STRAIGHT RUN OF BUILDINGS SEWER, WITH 24 HOUR ACCESSIBILITY AND LOCATED ON THE OWNERS PROPERTY AS CLOSE AS POSSIBLE TO THE PUBLIC RIGHT OF WAY.
4. THE PALMER BOWLUS FLUME OR APPROVED EQUAL, SHALL BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.
5. TOP OF VAULT SHALL BE A MINIMUM 3", AND A MAXIMUM OF 24" ABOVE FINISHED GRADE.
6. VAULT SHALL BE SUPPLIED WITH 110 VAC IN AN EXPLOSION PROOF BOX (INSTALLED TO CODE).
7. INDUSTRY MAY BE REQUIRED TO INSTALL FLOW MONITORING EQUIPMENT APPROVED BY THE DIVISION. A JUNCTION BOX SHALL BE PROVIDED IN THE VAULT WITH AN AMPHENOL CONNECTOR 973102A14s6p AND CAP #9760-14.

MATERIALS LIST

(1) Precast concrete vault and cover.

(2) 110 VAC junction box (explosion proof)

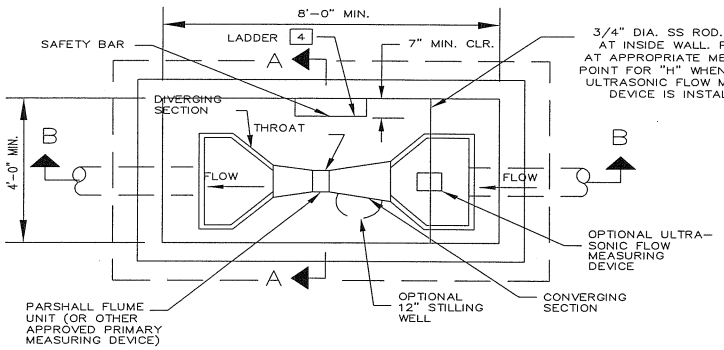
(3) Junction box with Amphenol connector for 4-20MA output or pulse output.

(4) Lid must be equipped with factory installed locking mechanism.

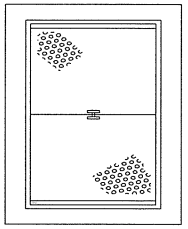
APPROVED BY: Harry J Bowles
CITY ENGINEER

4/28/02
DATE

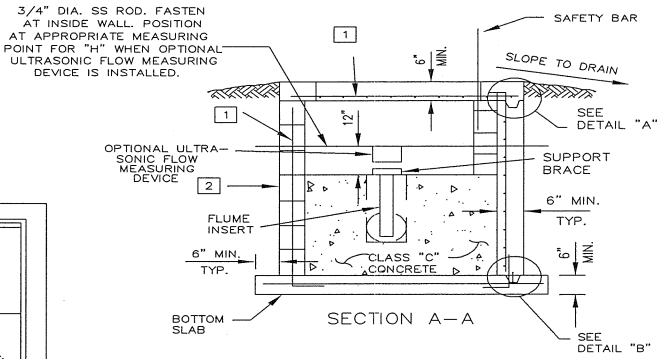
REVISED : JUNE 2002



PLAN VIEW (TYP.)



COVER WITH LID

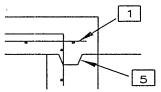


SECTION A-A

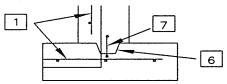
CAST-IN-PLACE VAULT

NOTES

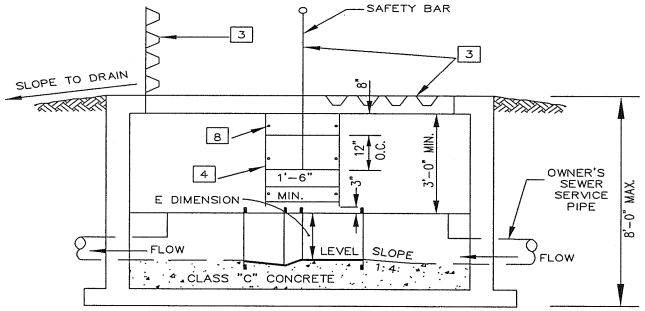
1. REINFORCED STEEL AND CLEARANCE AS APPROVED BY THE ENGINEER.
2. BLACK MASONRY MAY BE USED IN LIEU OF CIP WALLS. 8" BLOCK MASONRY, GROUT EACH CELL TO FULL HEIGHT (GROUT PER MAG SECTION 776).
3. 2 TORSION SPRING ASSISTED GALVANIZED DIAMOND PLATE ACCESS DOORS (DESIGN LOADING AASHO-H20) LOCKING WITH TYPE 304SS HARDWARE AND SAFETY BAR (BLICO MODEL LU-3, OR APPROVED EQUAL).
4. LADDER SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE DETAIL AND SHALL MEET THE REQUIREMENTS OF OSHA FOR TYPE 1A (300lbs) FIXED LADDERS, SINGLE SECTION. DETAILS OF LADDER CONSTRUCTION, ALONG WITH A CERTIFICATION THAT THE LADDER MEETS OR EXCEEDS OSHA REQUIREMENTS FOOT TYPE 1A (300lbs) SERVICE SHALL BE SUBMITTED FOR REVIEW PRIOR TO FURNISHING AND INSTALLING. MILL FINISHED ALUMINUM LADDER OR APPROVED CORROSION RESISTANT MATERIAL.
5. 2" x 4" KEY, CENTER ON WALL. (INSTALL ROPE CAULK CONTINUOUSLY).
6. 1-5/8" x 2-1/2" x 3" KEY.
7. 4" PVC DUMBELL TYPE CONTINUOUS WATERSTOP 3/8" MIN. THICKNESS. (WASH THOROUGHLY PRIOR TO INSTALLATION.
8. ANCHOR STRAPS (3 EACH SIDE) WITH 5/8" x 3-1/2" 316SS ANCHOR BOLTS WITH LOCK WASHER AND NUT.



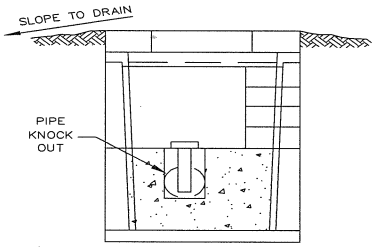
TOP KEY
DETAIL "A"



BOTTOM KEY
DETAIL "B"



SECTION B-B



SECTION A-A

PRE-CAST VAULT

UTILITY VAULT CO.
VAULT NO. 575-BL,
NO. 577-BL OR
APPROVED EQUAL

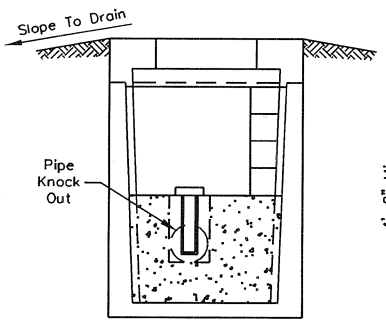
GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO MAG SPECIFICATIONS AND DETAIL AND CITY OF SCOTTSDALE SUPPLEMENT TO MAG SPECIFICATIONS AND DETAILS, UNLESS MODIFIED ON PLANS.
2. ALL CONCRETE FLOORS, WALLS AND TOP SLAB OF THE STRUCTURE SHALL CONFORM TO MAG SECTION 725, CLASS A, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 3,000PSI.
3. ALL CONCRETE FOR GROUT FILLET INSIDE THE STRUCTURE SHALL CONFORM TO MAG SECTION 725, CLASS C, MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 2,000 PSI.
4. ALL STEEL REINFORCING SHALL BE DEFORMED BARS, GRADE 60, BILLET STEEL CONFORMING TO ASTM SPECIFICATION NO. A-615, LATEST EDITION.
5. THE MONITORING/SAMPLING VAULT SHALL BE INSTALLED ON THE OWNER'S PROPERTY AS CLOSE TO THE CUSTOMER TAP TO THE CITY SEWER AS FEASIBLE, AND APPROVED BY THE CITY OF SCOTTSDALE.
6. FLUME SIZE SHOULD BE BASED UPON THE MINIMUM AND MAXIMUM FLOW RATES AND VELOCITIES TO INSURE FREE-FLOW CONDITIONS.
   - -MAXIMUM FLOW = 70%-100% OF MAXIMUM CAPACITY OF SELECTED FLUME SIZE.
   - -0.5 INCHES OF FLOW SHOULD EXIST AT THE MINIMUM ACTUAL FLOW.
7. FLUME FLOOR ELEVATION SHOULD BE HIGH ENOUGH, RELATIVE TO DOWNSTREAM CONDITIONS, TO PREVENT SUBMERGED FLOW (50% SUBMERGENCE IS ACCEPTABLE AT MAXIMUM FLOW). INSTALL THE FLUME LEVEL (LONGITUDINALLY AND TRANSVERSELY) IN THE CONVERGING SECTION.
8. UPSTREAM FLOW SHOULD BE WAVE FREE, NON-TURBULENT, AND SYMMETRICAL HAVING A UNIFORM VELOCITY (1fps MINIMUM TO 3fps MAXIMUM) AT LEAST 10 TIMES THE DIAMETER OF THE UPSTREAM SEWER PIPE IN LENGTH IN THE APPROACH CHANNEL. BENDS UPSTREAM IN THE FLUME WILL NOT BE ALLOWED FOR A DISTANCE OF 25 PIPE DIAMETERS UNLESS CONDITIONS IN THE APPROACH SECTION OF THE FLUME WILL NOT BE ADVERSELY AFFECTED.
9. THE FLUME SHALL BE INSTALLED OFF-CENTER AND AWWAY FROM THE LADDER TO ALLOW THE MAXIMUM WORKING SPACE FOR CITY PERSONNEL.
10. IT SHALL BE THE OWNER'S RESPONSIBILITY TO PROPERLY MAINTAIN THE FLUME IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS TO ENSURE THE ACCURACY OF THE MEASUREMENT.

EQUIPMENT DESCRIPTION

A FISHER AND PORTER TYPE 10F1940, HINDE ENGINEERING COMPANY, PS-1001, OR APPROVED EQUAL MOLDED FIBERGLASS REINFORCED POLYESTER PARSHALL FLUME SHALL BE INSTALLED. THE FLUME SHALL BE MOLDED IN ONE PIECE WITH AMPLE WALL THICKNESS AND REINFORCING RIBS TO PREVENT DISTORTION DURING SHIPMENT, INSTALLATION, AND OPERATION. THE FLUME SHALL BE SELF-SUPPORTING AND REQUIRE NO EXTERNAL SUPPORTING STRUCTURE. INTERIOR DIMENSIONS SHALL CONFORM TO THOSE IN THE LATEST REVISION OF WATER MEASUREMENT MANUAL PUBLISHED BY THE U.S. DEPARTMENT OF THE INTERIOR, WATER AND POWER RESOURCES SERVICES. THE THROAT WIDTH AND FLUME HEIGHT (*E DIMENSION) SHALL BE PER PLAN.

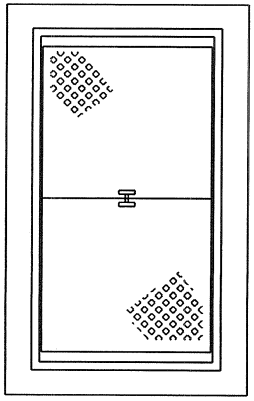
DETAIL NO. G-3450	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	MONITOR/SAMPLING VAULT	DETAIL NO. G-3450



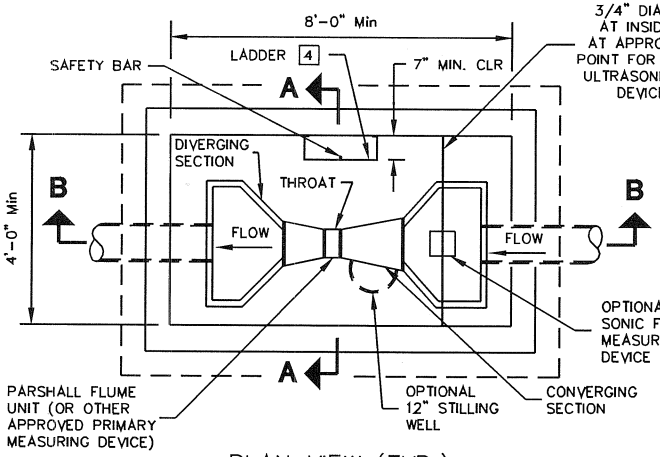
SECTION A–A

PRE–CAST VAULT

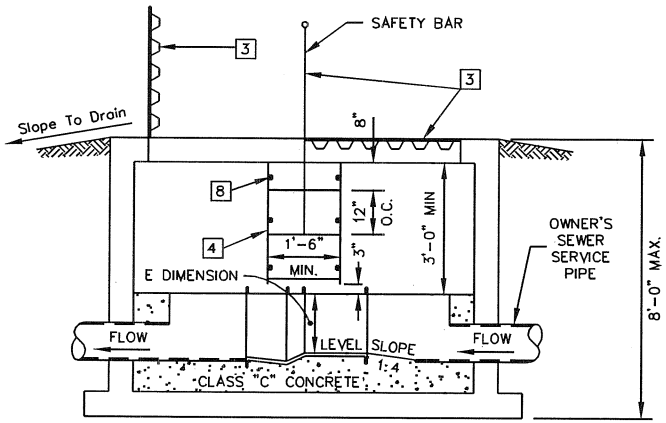
UTILITY VAULT CO.
VAULT NO. 575–BL,
NO. 577–BL OR
APPROVED EQUAL



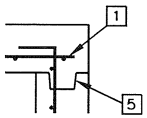
COVER WITH LID



PLAN VIEW (TYP.)

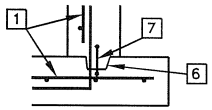


SECTION B–B



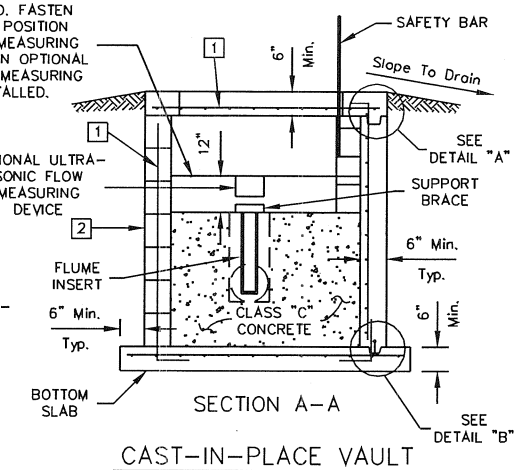
TOP KEY

DETAIL "A"



BOTTOM KEY

DETAIL "B"



SECTION A–A

CAST–IN–PLACE VAULT

NOTES:

1. Reinforced steel and clearance as approved by the engineer.
2. Block masonry may be used in lieu of CIP walls. 8" block masonry, grout each cell to full hieght (grout per MAG Section 776).
3. 2 Torsion spring assisted galvanized diamond plate access doors (design loading AASHO–H20) locking with type 304SS hardware and safety bar (Bilco Model LU–3, or approved equal).
4. Ladder shall be furnished and installed in accordance with the detail and shall meet the requirements of OSHA for Type IA (300 lbs) fixed ladders, single section. Details of ladder construction, along with a certification that the ladder meeets or exceeds OSHA requirements for Type IA (300 lbs) service shall be submitted for review prior to furnishing and installing. Mill finished aluminum ladder or approved corrosion resistant material.
5. 2"x 4" key, center on wall. (Install rope caulk continuously).
6. 1–5/8"x 2–1/2"x 3" key.
7. 4" PVC dumbell type continuous waterstop 3/8" min. thickness. (Wash thoroughly prior to installation.
8. Anchor straps (3 each side) with 5/8" x 3–1/2" 316SS anchor bolts with lock washer and nut.

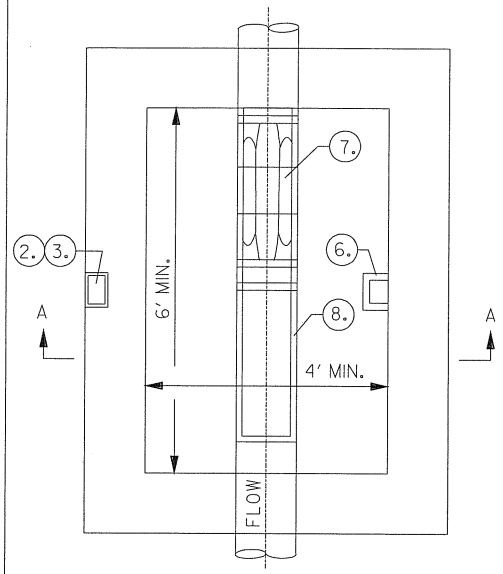
GENERAL NOTES

1. All construction shall conform to MAG Specifications and Details and City of Scottsdale Supplement to MAG Specifications and Details, unless modified on the plans.
2. All concrete floors, walls and top slab of the structure shall conform to MAG section 725, Class A, minimum compressive strength at 28 days = 3,000 psi.
3. All concrete for the grout fillet inside the structure shall conform to MAG Section 725, Class C, minimum compressive strength at 28 days = 2,000 psi.
4. All steel reinforcing shall be deformed bars, Grade 60, billet steel conforming to ASTM Specification No. A–615, latest edition.
5. The Monitoring/Sampling Vault shall be installed on the owner's property as close to the customer tap to the City sewer as feasible, and approved by the City of Scottsdale.
6. Flume size should be based upon the minimum and maximum flow rates and velocities to insure free–flow conditions.
   - –Maximum Flow = 70%–100% of maximum capacity of selected flume size.
   - –0.5 inches of flow should exist at the minimum actual flow.
7. Flume floor elevation should be high enough, relative to downstream conditions, to prevent submerged flow (50% submergence is acceptable at maximum flow), install the flume level (longitudinally and transversely) in the converging section.
8. Upstream flow should be wave free, non–turbulent, and symmetrical having a uniform velocity (1fps minimum to 3 fps maximum) at least 10 times the diameter of the upstream sewer pipe in length in the approach channel. Bends upstream in the flume will NOT be allowed for a distance of 25 pipe diameters unless conditions in the approach section of the flume will not be adversely affected.
9. The flume shall be installed off–center and away from the ladder to allow the maximum working space for City personnel.
10. It shall be the owner's responsibility to properly maintain the flume in accordance with the manufacturers recommendations to ensure the accuracy of the measurement.

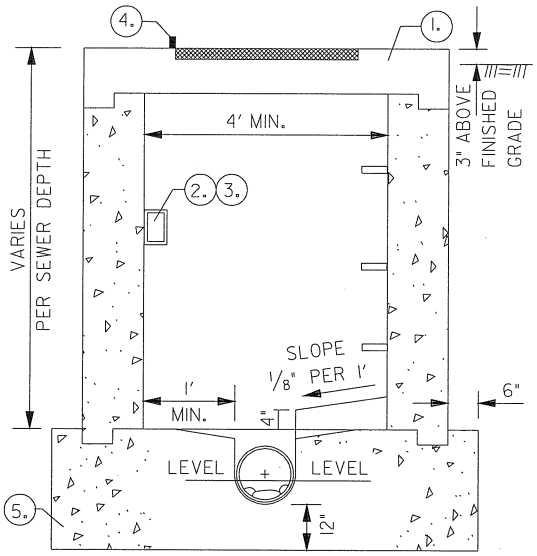
EQUIPMENT DESCRIPTION

A Fisher and Porter type 10F1940, Hinde Engineering Company, PS–1001, or approved equal molded fiberglass reinforced polyester Parshall Flume shall be installed. The flume shall be molded in one piece with ample wall thickness and reinforcing ribs to prevent distorsion during shipment, installation and operation. The flume shall be self–supporting and require no external supporting structure. Interior dimensions shall conform to those in the latest revision of Water Measurement Manual published by the U.S. Department of the Interior, Water and Power Resources Services. The throat width and flume height (*E dimension) shall be per plan.

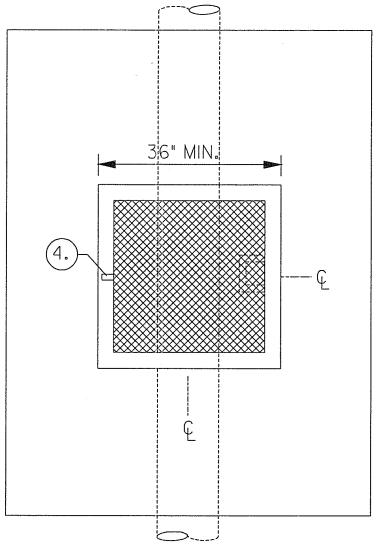
DETAIL NO. 2460	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	MONITORING/SAMPLING VAULT	DETAIL NO. 2460



PLAN VIEW



SECTION A-A



MANHOLE & COVER SLAB

MATERIALS LIST

1. PRECAST CONCRETE VAULT AND COVER.
2. 110 VAC JUNCTION BOX (EXPLOSION PROOF).
3. JUNCTION BOX WITH AMHPENOL CONNECTOR FOR 4-20MA. OUTPUT OR PULSE OUTPUT.
4. LID MUST BE EQUIPPED WITH FACTORY INSTALLED LOCKING MECHANISUM.
5. CAST IN PLACE BASE CLASS B CONCRETE
6. M.H. STEPS PER MAG. STD. DET. NO. 428 AT CENTER.
7. PALMER BOWLUS OR PARSHALL STYLE FLUME OR APPROVED EQUAL.
8. ADDITIONAL BRACE AT MEASURING POINT.

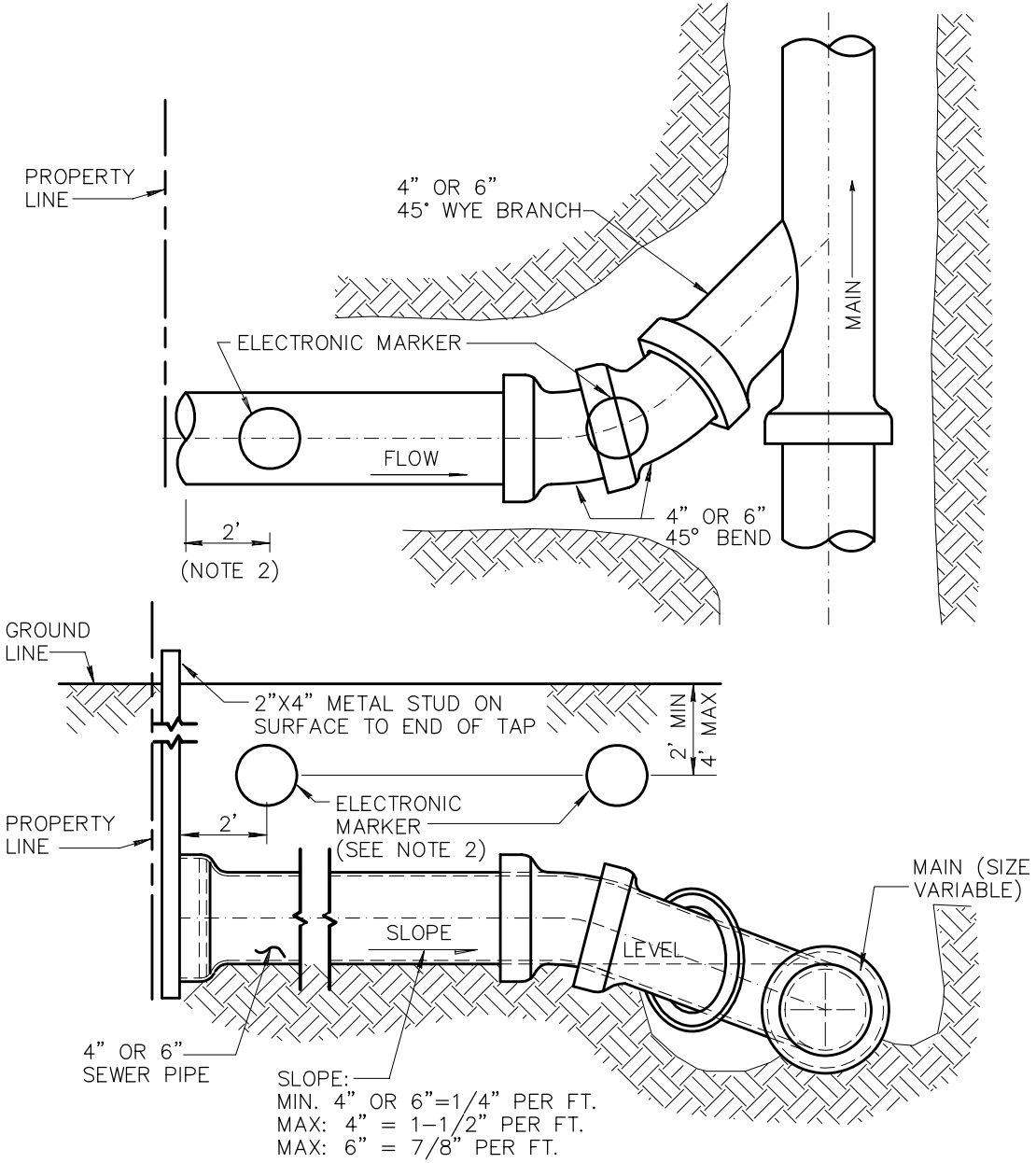
NOTES:

1. Invert Elevations shall be Provided for the Proposed flume. This shall include elevations for the entire run of piping to Which the Flume is to be connected.
2. Flow Calculations shall be Provided Indicating the Minimum, Maximum, and Average Flows to Be Discharged Through the Flume.
3. The Minimum Inside Dimensions Shall be (4') Four Feet by (6') Six Feet, with a Minimum Inside Height of (36") Thirty Six Inches from the top of the Flume. Any Alterations to These Requirements shall be Reviewed on a Case by Case Basis by the Environmental Division.
4. Access to the Vault shall be a Bilco Style Door with a Factory Installed Locking Mechanism. The Door shall be a Minmum Inside Opening Diameter of (29") Twenty Nine Inches and Place Over the Center of the Flume. A Double Hinged Style Door shall be Used when Posible. Load Specifications of the Door Reviewed Depending on the Placement of the Vault.
5. Vault shall be Constructed on a Straight run of the Building Sewer with (24) Twenty Four Hour Accessibility and Located on the Premises as Close as Possible to the Public Right of Way.
6. Top of Vault shall be a Minimum (3") three inches and a Maximum of (24") Inches Above Finished grade.
7. Vault shall be Supplied with 110 VAC in an Explosion Proof Box (Installed to Code).
8. Industry shall Install a Junction Box with an Amphenol Style Connector Call 350-2678 To Obtain Parts numbers.
9. A Palmer Bowlus, Parshall Style Flume or Approved Equal, shall be Installed per the Manufacturers Recommendations. Flume shall be Placed in the Center of the Vault.

APPROVED: ORIGINAL SIGNATURE ON FILE AT THE CITY OF TEMPE

CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	CONTROL SAMPLING VAULT	DETAIL T-454 REVISED 1998

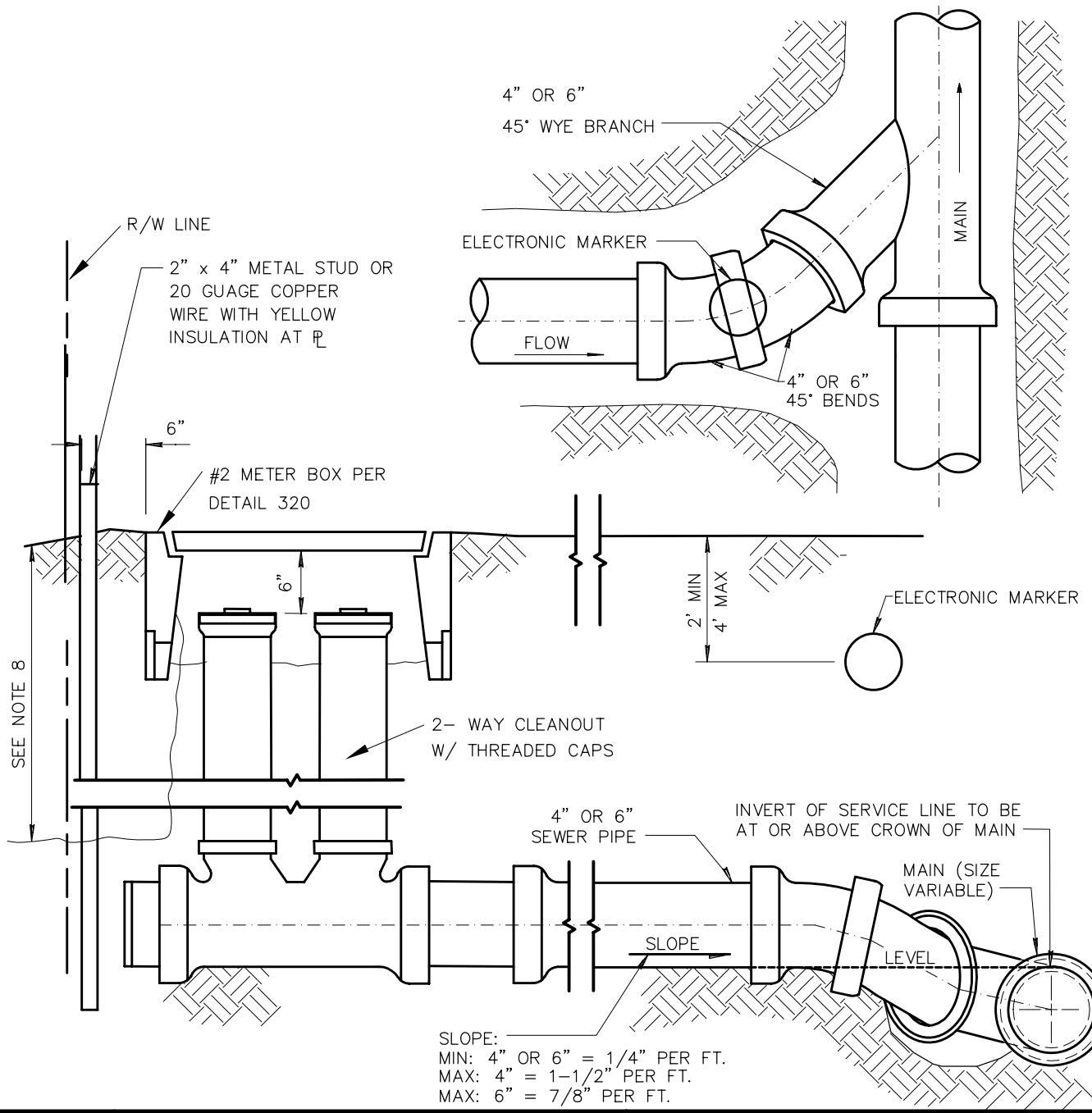


ELECTRONIC MARKER PLACEMENT

NOTES:

1. ELECTRONIC MARKER SHALL BE A 3M MODEL 1424-XR/iD [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
2. MARKER SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, 2' BACK FROM THE END OF THE SEWER SERVICE STUB AND CINCH TIED TO PIPE OR ABOVE PIPE AS REQUIRED BY LOCAL AGENCY. AN ADDITIONAL MARKER SHALL BE INSTALLED AT EACH SERVICE STUB BEND.
3. ELECTRONIC MARKER SHALL BE RESTORED BY CONTRACTOR IF DISTURBED WHEN PRIVATE SERVICE LINE CONNECTION IS INSTALLED.
4. MARKER SHALL BE USED IN ADDITION TO A 2"x4" METAL STUD.
5. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
6. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
7. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
8. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTINGS JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
9. END OF TAP TO BE SEALED AND MARKED AS NOTED.

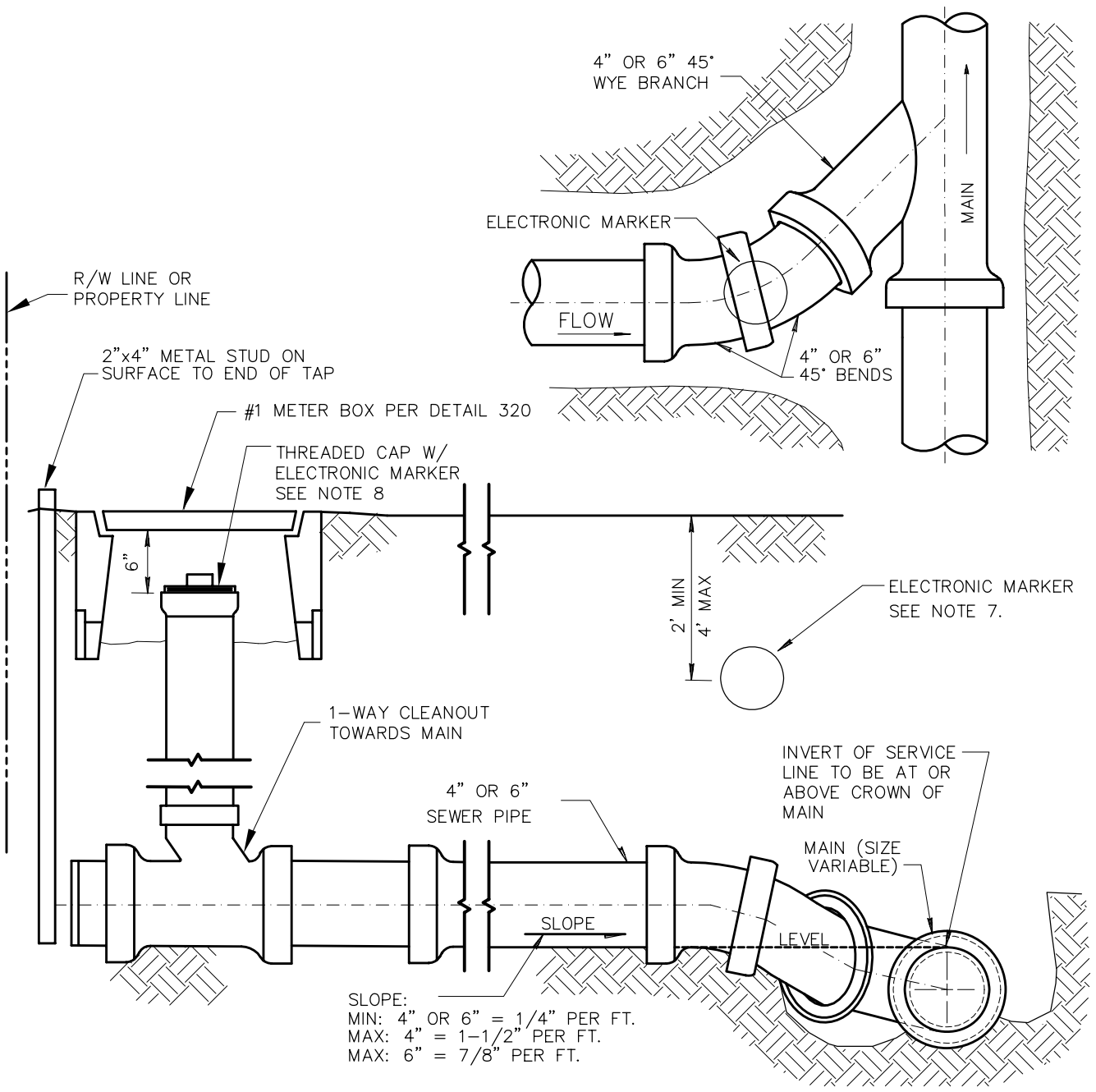
DETAIL NO.			REVISED	DETAIL NO.
440-1	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	**TYPE 'A' – SEWER BUILDING CONNECTION ELECTRONIC BALL MARKERS (STANDARD)**	01-01-2007	440-1



NOTES:

1. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
2. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
3. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
4. IF DEPTH REQUIRES, MINIMUM SLOPE CAN BE REDUCED TO 1/8" PER FOOT PROVIDED STUB IS STAKED TO GRADE.
5. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTING JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
6. END OF TAP TO BE SEALED AND MARKED AS NOTED.
7. ELECTRONIC MARKER SHALL BE A 3M MODEL 1424-XR/iD [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
8. # 14 BARE COPPER LOCATOR WIRE ACCESSIBLE AT R/W AND AT PROPERTY OWNER CLEANOUT BOX NO GREATER THAN 4' DEEP.
9. STAMP OR WELD THE LETTER "S" ON LID OF METER BOX.

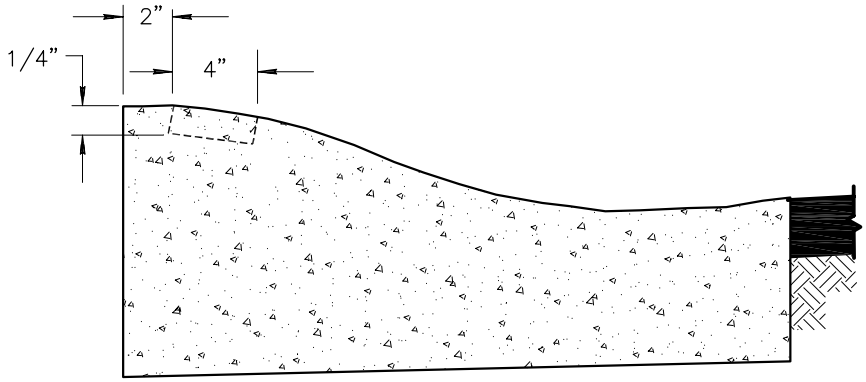
DETAIL NO.			REVISED	DETAIL NO.
440-2	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	**TYPE 'B' – SEWER BUILDING CONNECTION** **TWO-WAY CLEANOUT AND METER BOX AT R/W** (WHEN SPECIFIED BY LOCAL AGENCY)	01-01-2007	440-2



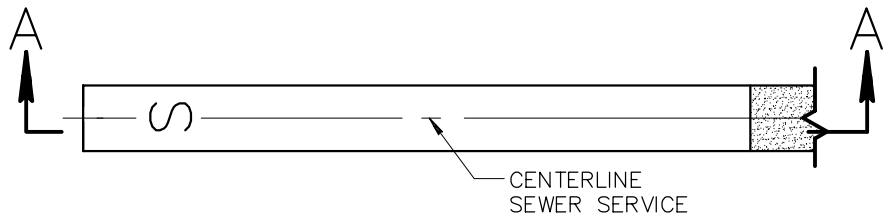
NOTES:

1. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
2. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
3. CONSTRUCT TAP AT MIN. SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
4. IF DEPTH REQUIRES, MINIMUM SLOPE CAN BE REDUCED TO 1/8" PER FOOT PROVIDED STUB IS STAKED TO GRADE.
5. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTING JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
6. END OF TAP TO BE SEALED AND MARKED.
7. ELECTRONIC MARKER SHALL BE A 3M MODEL 1424-XR/iD [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE LOCAL AGENCY.
8. INSTALL RAISED 4" THREADED PLUG IN CLEANOUT INCORPORATING 3M MODEL 1414 ELECTRONIC DISC MARKER. GREEN IN COLOR. LOCATOR PLUG TO BE GPK PRODUCTS MODEL #228-0004 DM OR APPROVED EQUAL.
9. STAMP OR WELD THE LETTER "S" ON LID OF METER BOX.

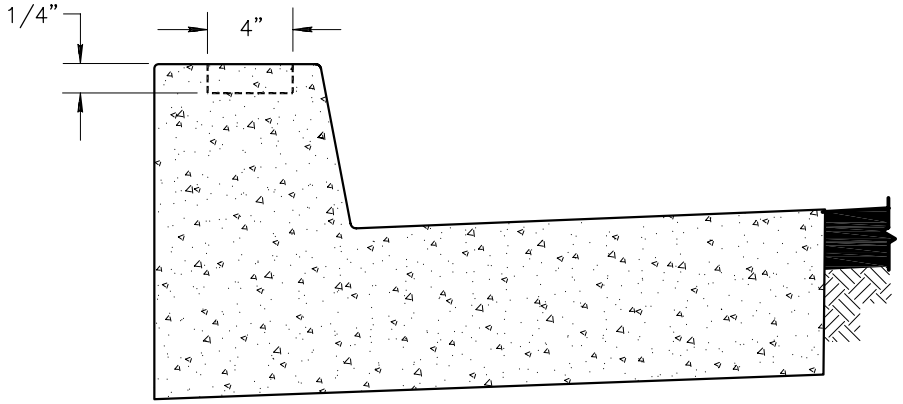
DETAIL NO.				REVISED	DETAIL NO.
440-3	MARICOPA ASSOCIATION of GOVERNMENTS — STANDARD DETAIL ENGLISH	**TYPE 'C' – SEWER BUILDING CONNECTION** **ONE-WAY CLEANOUT AND METER BOX** (WHEN SPECIFIED BY LOCAL AGENCY)		01-01-2007	440-3



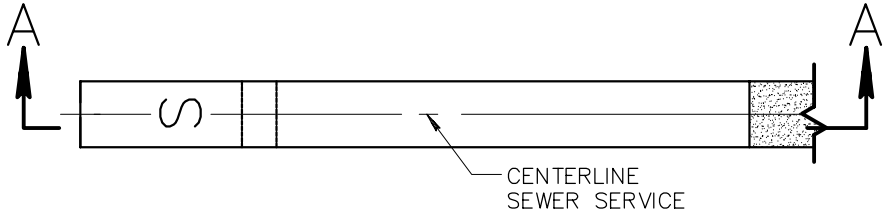
SECTION A–A



CURB STAMP ROLLED CURB



SECTION A–A

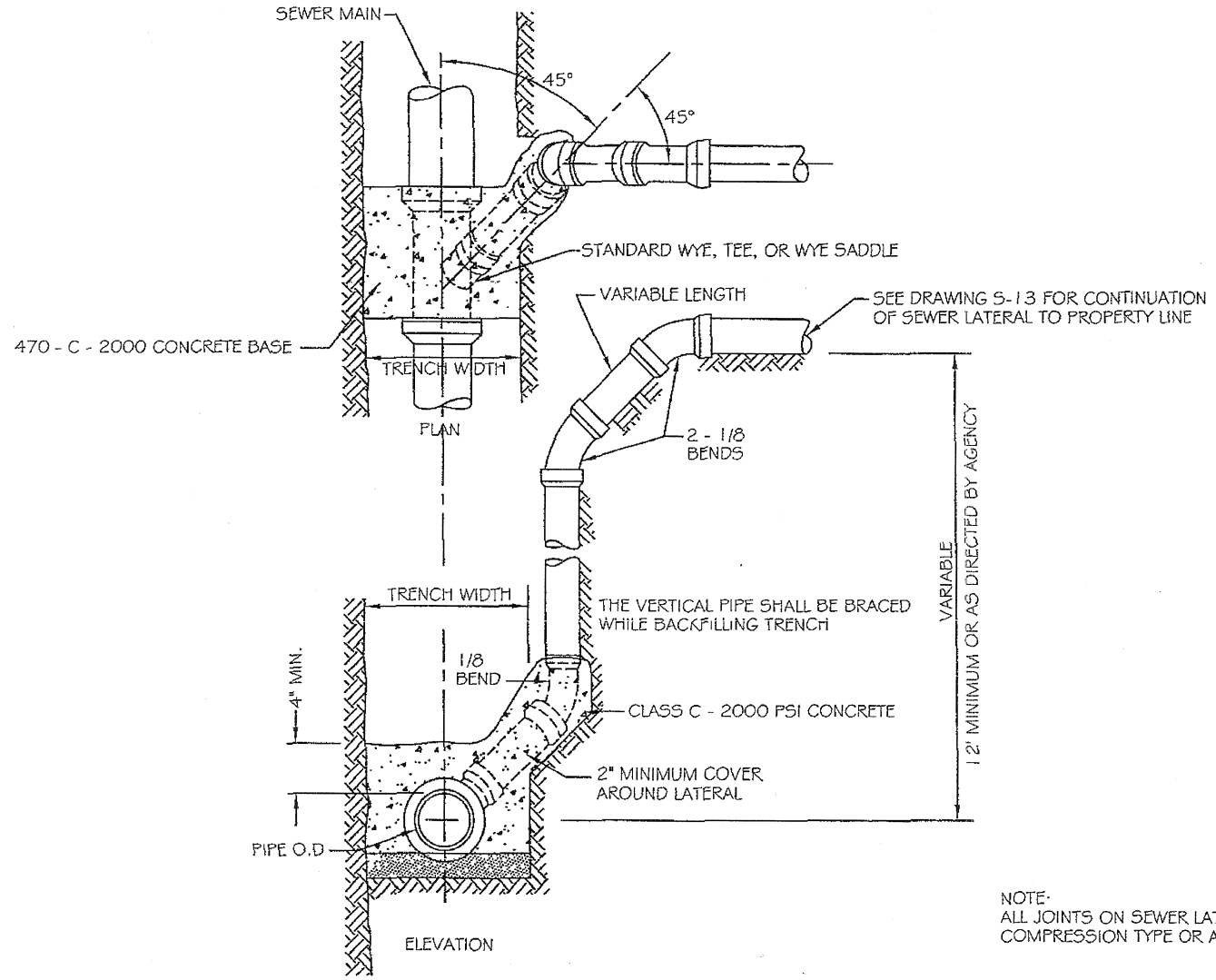


CURB STAMP VERTICAL CURB

NOTES:

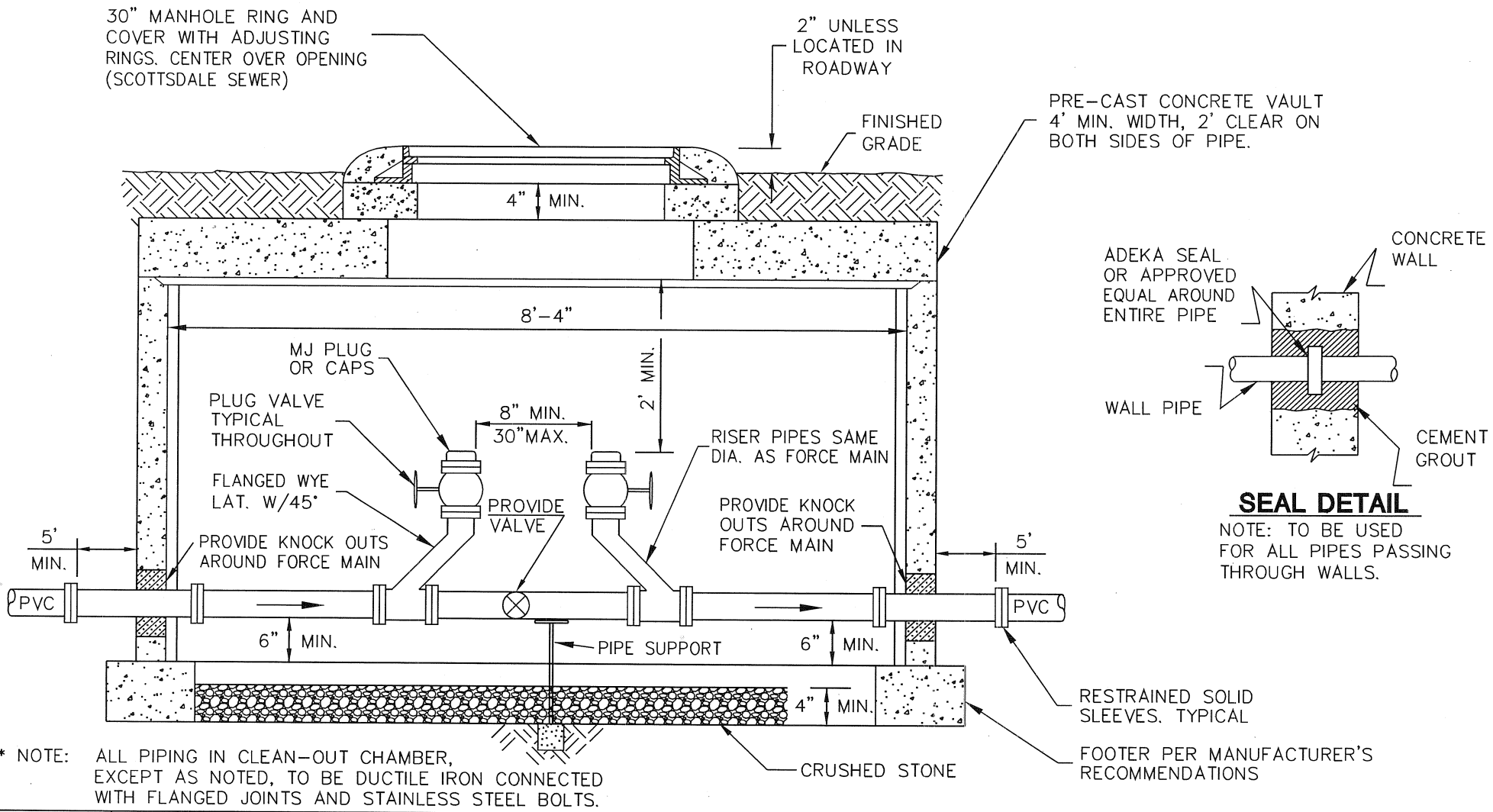
1. STAMP TOP OF CURB WITH 4" TALL BY 1/4" DEEP "S" TO DESIGNATE SEWER SERVICE LINE CROSSING.

DETAIL NO.			REVISED	DETAIL NO.
440–4	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	SEWER SERVICE CURB CROSSING STAMP DETAIL	01–01–2006	440–4



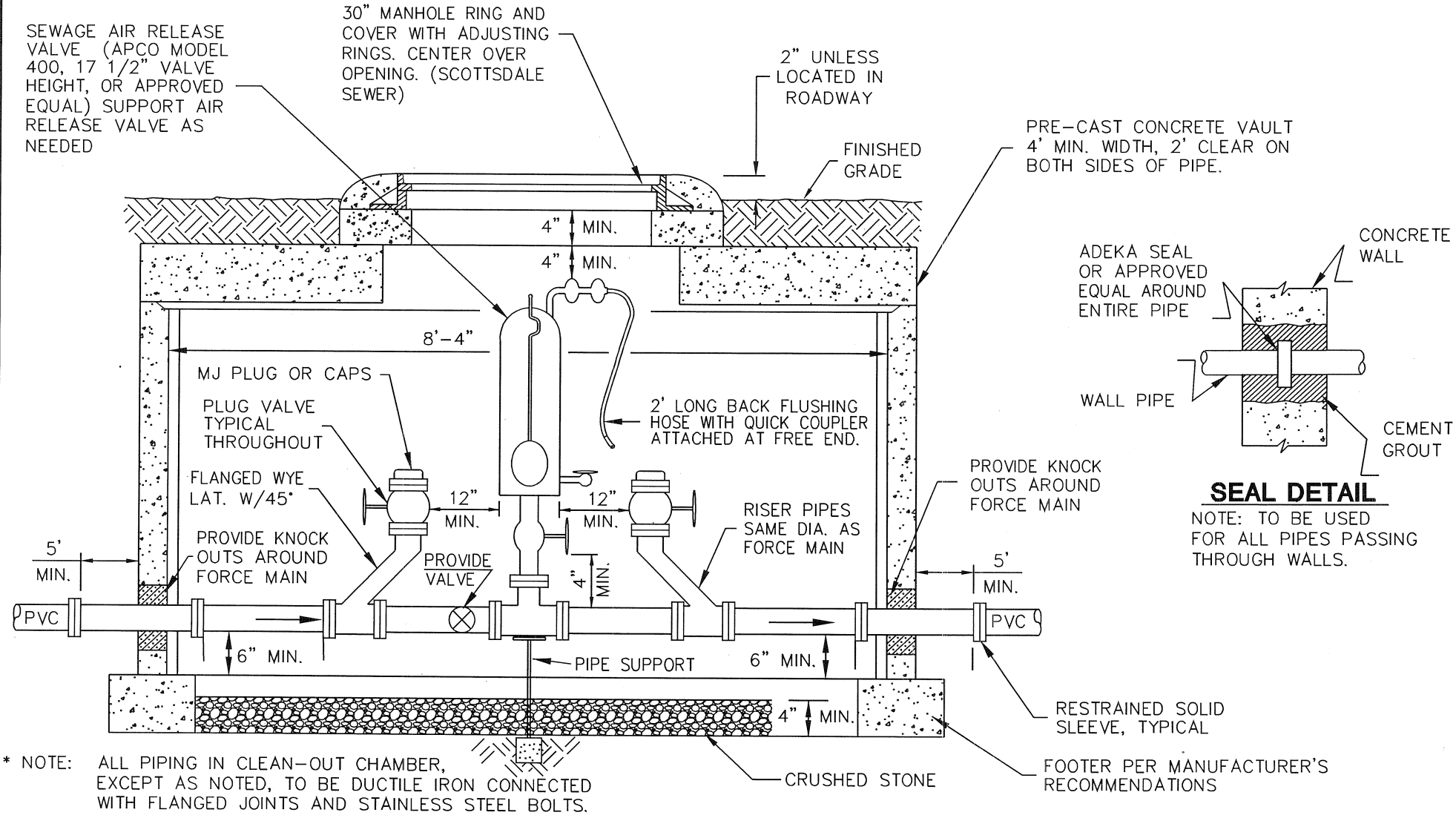
NOTE:
ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.

DETAIL NO. C-410 NTS	CITY OF CHANDLER STANDARD DETAIL	**DEEP CUT HOUSE CONNECTION (SEWER LATERAL)**	APPROVED: CITY ENGINEER DATE: January 11, 2002	DETAIL NO. C-410 NTS



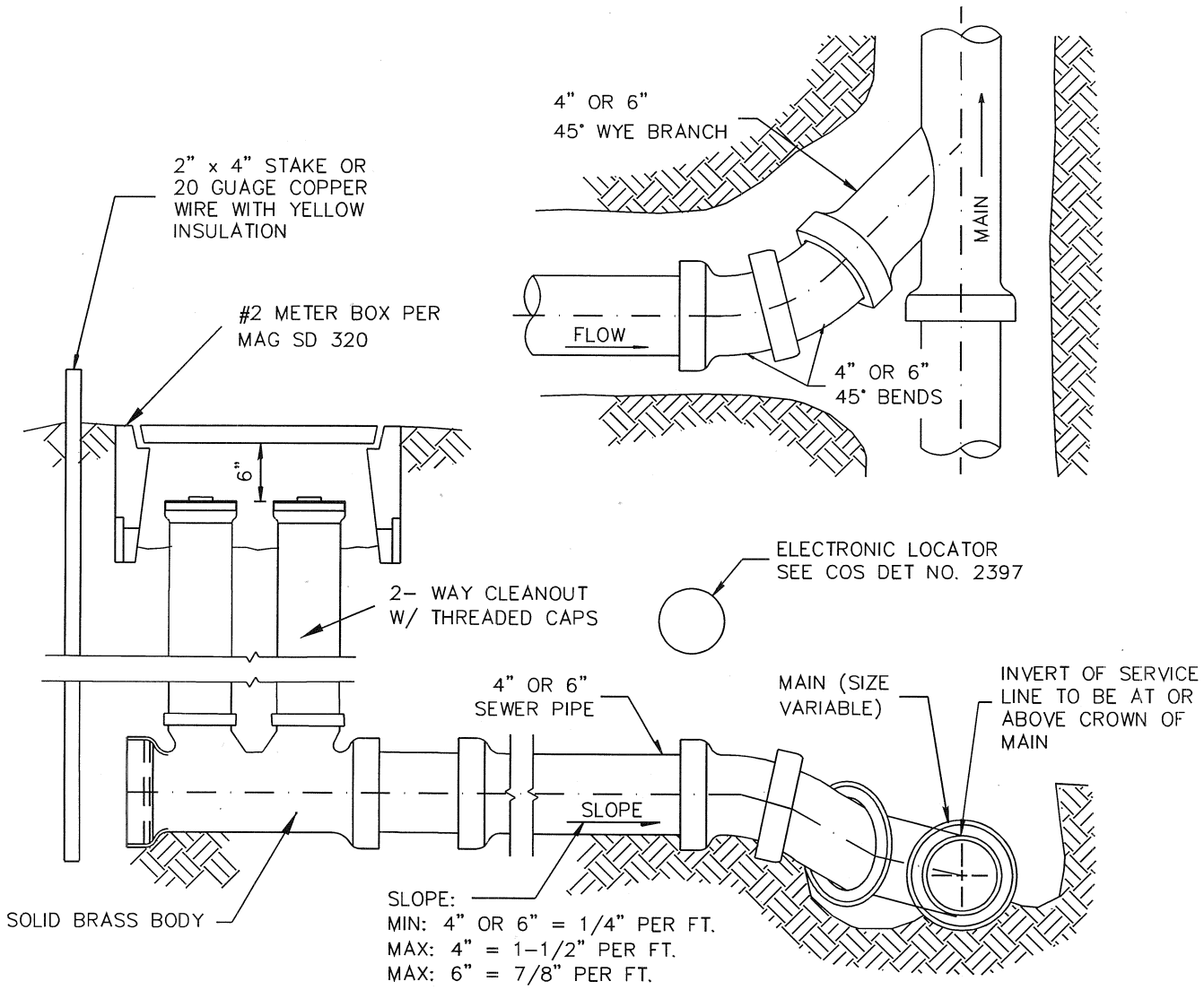
* NOTE: ALL PIPING IN CLEAN-OUT CHAMBER, EXCEPT AS NOTED, TO BE DUCTILE IRON CONNECTED WITH FLANGED JOINTS AND STAINLESS STEEL BOLTS.

DETAIL NO. 2403	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	TWO-WAY FORCE MAIN CLEAN-OUT - 3" AND ABOVE	DETAIL NO. 2403



* NOTE: ALL PIPING IN CLEAN-OUT CHAMBER, EXCEPT AS NOTED, TO BE DUCTILE IRON CONNECTED WITH FLANGED JOINTS AND STAINLESS STEEL BOLTS.

DETAIL NO. 2404	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	FORCE MAIN CLEAN-OUT W/ SEWAGE AIR RELEASE VALVE	DETAIL NO. 2404

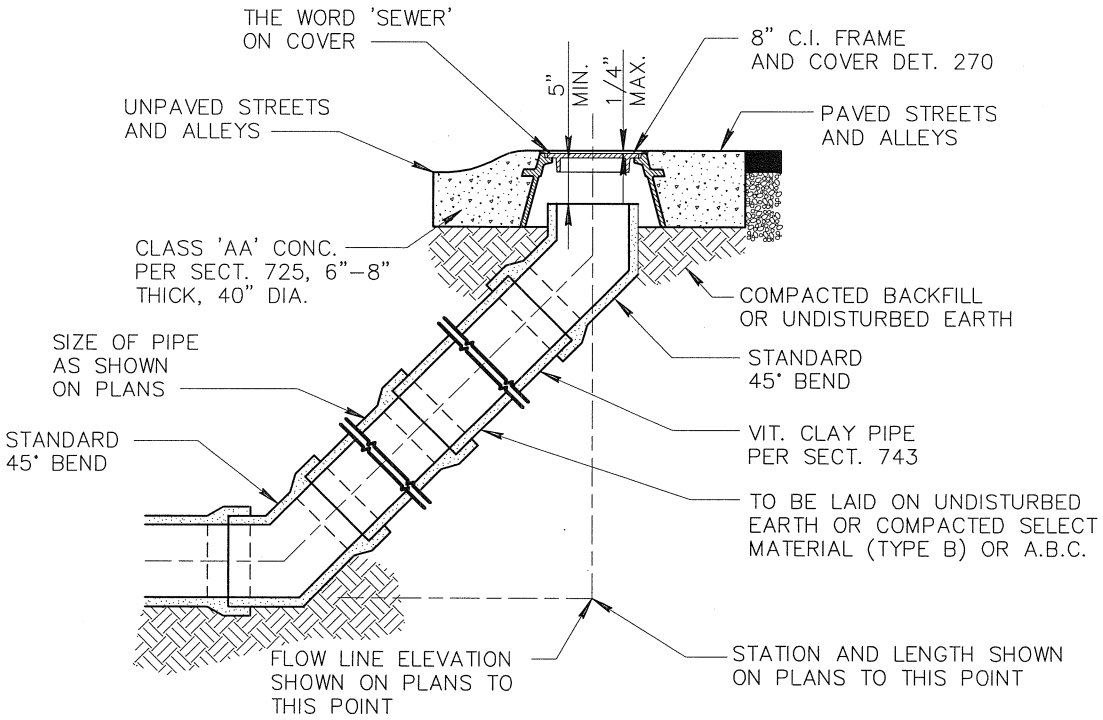


NOTES:

1. CONSTRUCTION DETAIL APPLIES WHERE CONTRACTOR BUILDS HOUSE CONNECTION. TAP EXTENDS TO PROPERTY LINE IN ALLEYS OR STREETS OR TO EASEMENT LINE.
2. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
3. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT PROPERTY LINE.
4. IF DEPTH REQUIRES, MINIMUM SLOPE CAN BE REDUCED TO 1/8" PER FOOT PROVIDED STUB IS STAKED TO GRADE.
5. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTING JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
6. END OF TAP TO BE SEALED AND MARKED AS NOTED.
7. PROVIDE ELECTRONIC BALL MARKER PER COS STD DETAIL 2397.

REVISED 3/23/05

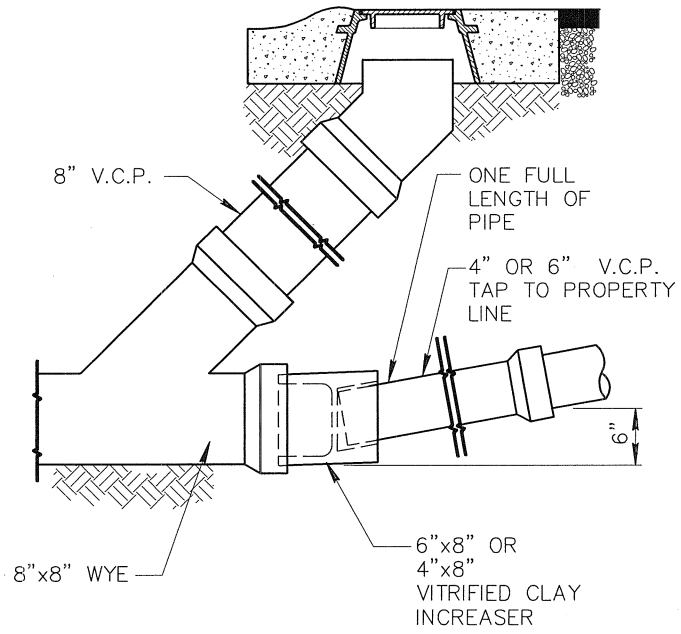
DETAIL NO. 2440	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	SEWER BUILDING CONNECTION	DETAIL NO. 2440



CLEANOUT INSTALLATION

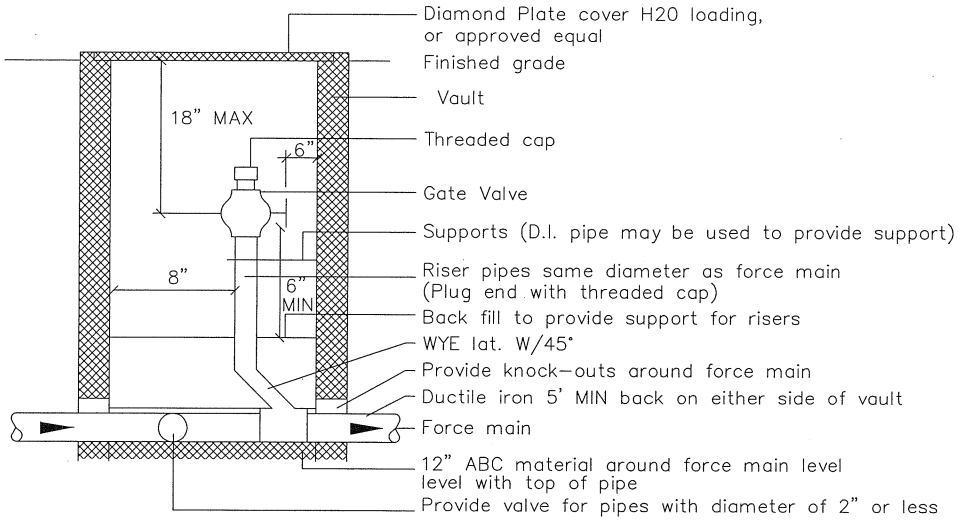
NOTE:

END OF SEWER TAP TO BE SEALED AND MARKED IN ACCORDANCE WITH DET. 440



SEWER TAP AT CLEANOUT

DETAIL NO.			REVISED	DETAIL NO.
441	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	SEWER CLEANOUT	01-01-2001	441

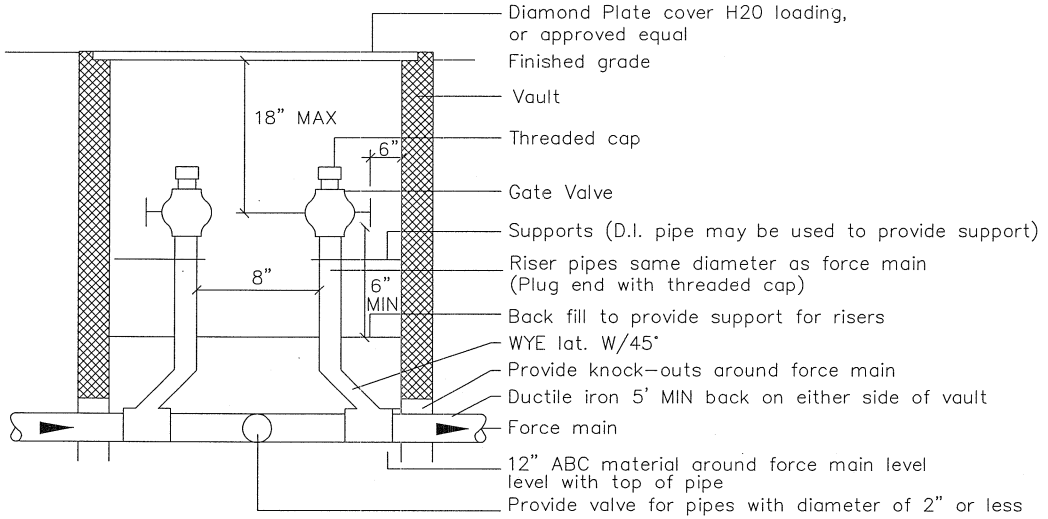


One Way Cleanout

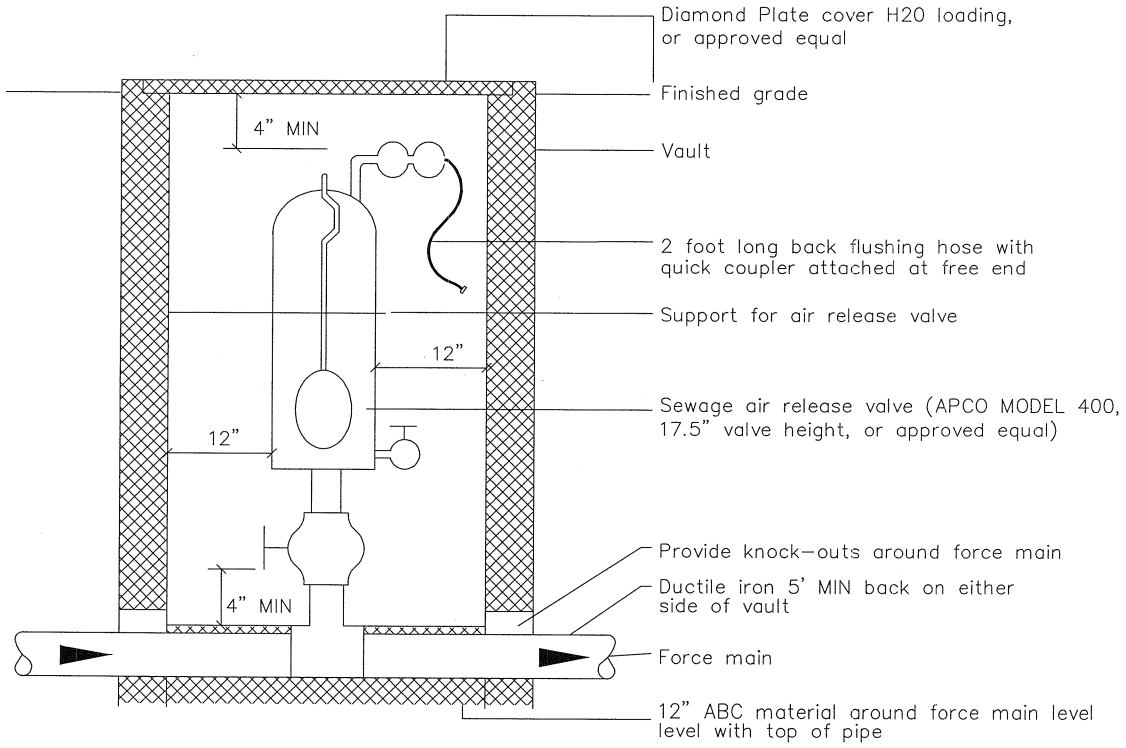
Note: One–way cleanouts shall be installed on maximum 400 foot centers along force main. Rotate vault as required to keep behind back of curb.

Two Way Cleanout

Note: Two–way cleanouts shall be installed on maximum 800 foot centers along force main. Rotate vault as required to keep behind back of curb.

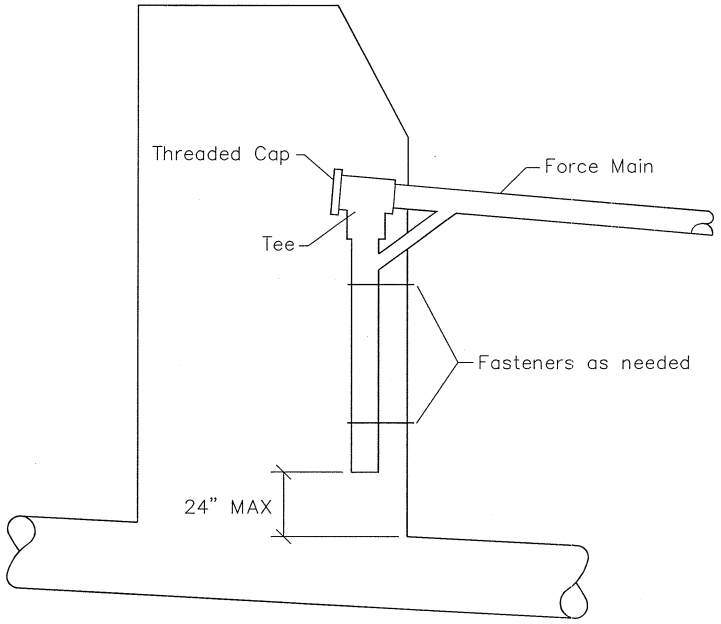


DETAIL NO. G-3440	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	FORCE MAIN CLEANOUTS	DETAIL NO. G-3440



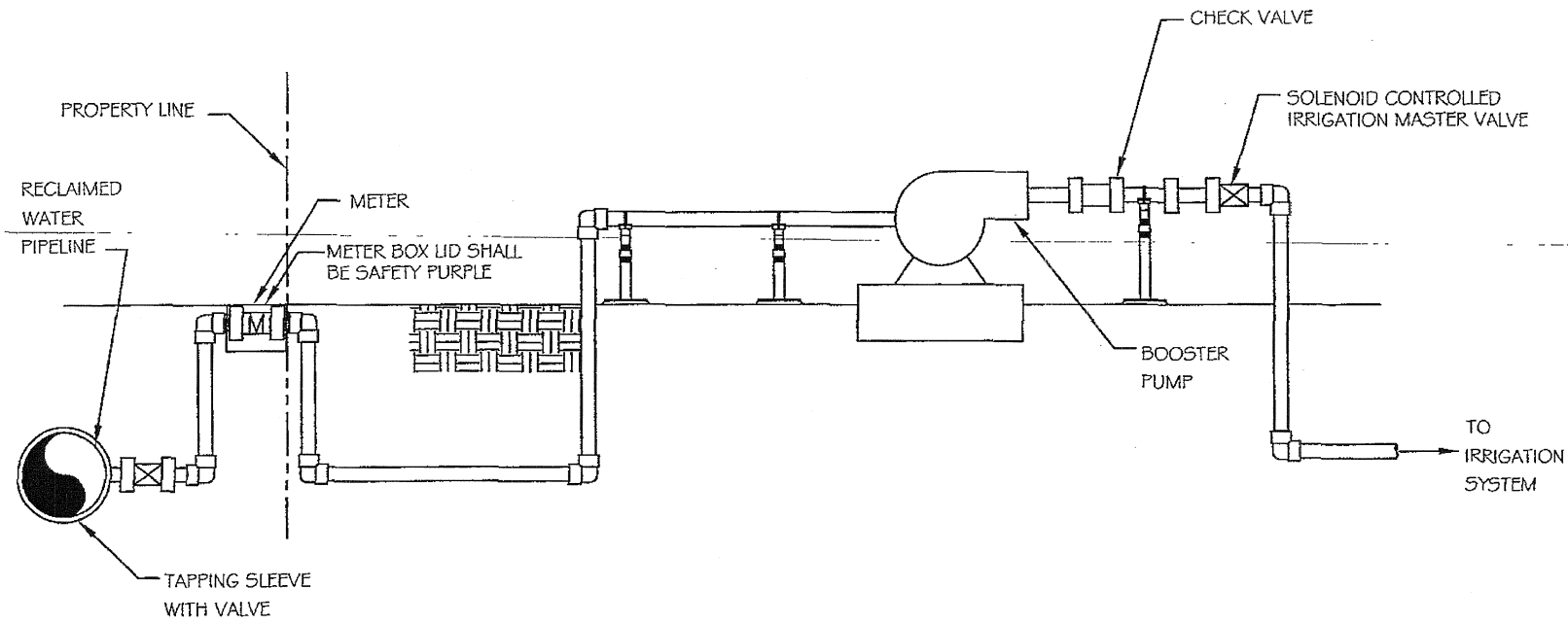
NOTE: Rotate vault as required to keep behind back of curb.

DETAIL NO. G-3441	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	SEWAGE AIR RELEASE VALVE	DETAIL NO. G-3441

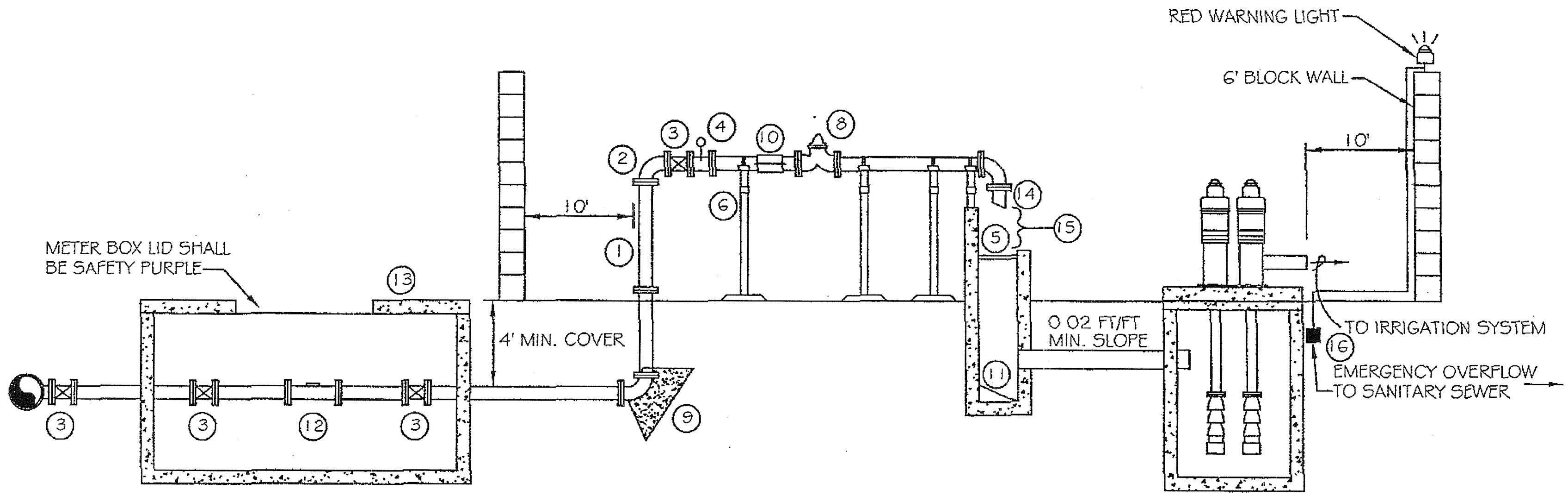


NOTE: Discharge outlet shall never be below crown of downstream pipe.

DETAIL NO. G-3442	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	FORCE MAIN - MANHOLE DISCHARGE	DETAIL NO. G-3442



DETAIL NO. C-404 PAGE 1 OF 2	CITY OF CHANDLER STANDARD DETAIL	SMALL WATER USER (WITHOUT LAKE) RECLAIMED WATER TURN-OUT	APPROVED: CITY ENGINEER DATE: January 11, 2002	DETAIL NO. C-404 PAGE 1 OF 2



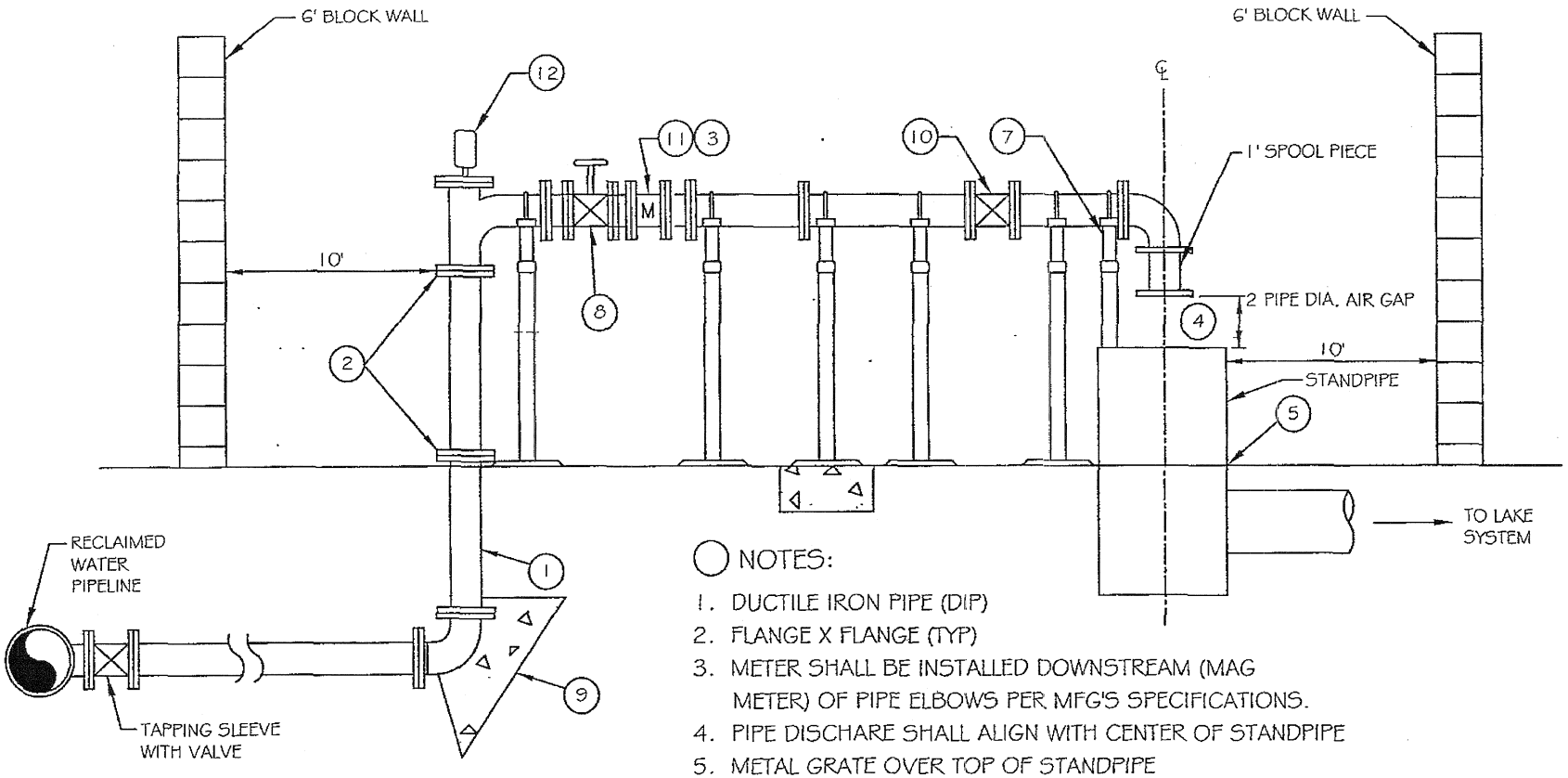
NOTES:

1. DUCTILE IRON PIPE (DIP)
2. FLANGE X FLANGE (TYP)
3. GATE VALVE
4. PIPE AIR/VACUUM RELIEF VALVE
5. METAL GRATE OVER TOP OF STANDPIPE
6. PIPE SUPPORTS BOLTED TO 6 INCH CONCRETE FOOTING EVERY 5 FEET ON CENTER (TYP)
7. PROVIDE RIGID PIPE SUPPORT AT STANDPIPE
8. CLA-VAL MODEL 131-66 OR EQUAL
9. PROVIDE THRUST BLOCK
10. DIP RESTRAINED COUPLING - (FLEX HARNESS)
11. GROUT BOTTOM TO PROVIDE POSITIVE FLOW
12. RECORDALL TURBO 2000 METER AS MANUFACTURED BY BADGER
13. UTILITY VAULT SIZED PER METER SIZE
14. DIP MITERED SPOOL PIECE
15. 2 PIPE DIAMETER AIR GAP
16. HIGH LEVEL ALARM (VISUAL WARNING LIGHT) FOR EMERGENCY OVERFLOW

GENERAL NOTES:

1. METER BOX LID TO BE PAINTED SAFETY PURPLE.
2. PROPERTY SHALL BE FENCED WITH 6 FOOT BLOCK WALL TO MATCH THE SURROUNDING WALL THEME.

DETAIL NO. C-404 PAGE 2 OF 2	CITY OF CHANDLER STANDARD DETAIL	**SMALL WATER USER (WITHOUT LAKE) RECLAIMED WATER TURN-OUT**	APPROVED: [signature] CITY ENGINEER DATE: January 11, 2002	DETAIL NO. C-404 PAGE 2 OF 2



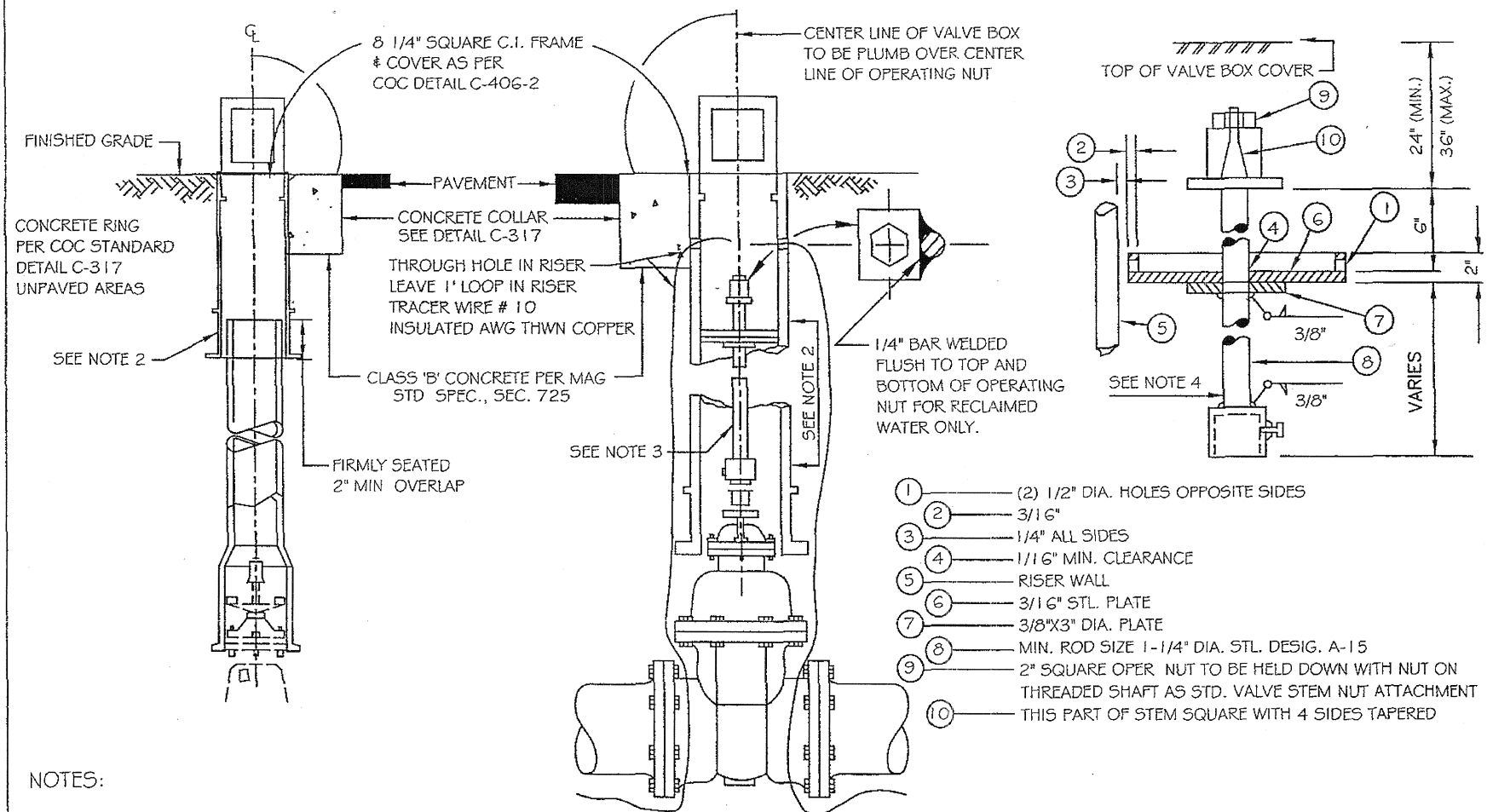
NOTES:

1. PROPERTY SHALL BE DEDICATED TO CITY AND KEYED TO CITY LOCK SYSTEM.
2. PROPERTY SHALL BE FENCED WITH 6 FOOT BLOCK WALL TO MATCH THE SURROUNDING WALL THEME.

NOTES:

1. DUCTILE IRON PIPE (DIP)
2. FLANGE X FLANGE (TYP)
3. METER SHALL BE INSTALLED DOWNSTREAM (MAG METER) OF PIPE ELBOWS PER MFG'S SPECIFICATIONS.
4. PIPE DISCHARE SHALL ALIGN WITH CENTER OF STANDPIPE
5. METAL GRATE OVER TOP OF STANDPIPE
6. PIPE SUPPORTS BOLTED TO 6 INCH CONCRETE FOOTING EVERY 5 FEET ON CENTER (TYP)
7. PROVIDE RIGID PIPE SUPPORT AT STANDPIPE
8. PROVIDE RESILIENT SEAT VALVE UPSTREAM FOR METER
9. PROVIDE THRUST BLOCK
10. CLA-VAL 150# FLG MODEL #631-G-01BCNSYKC ELECTRONIC CONTROL VALVE
11. METER: MAGMETER SPARLING TIGER MAG IF POSSIBLE WITH PULSE OUTPUT
12. AIR RELIEF/VACUUM VALVE - WATERMAN 2" OR EQUAL

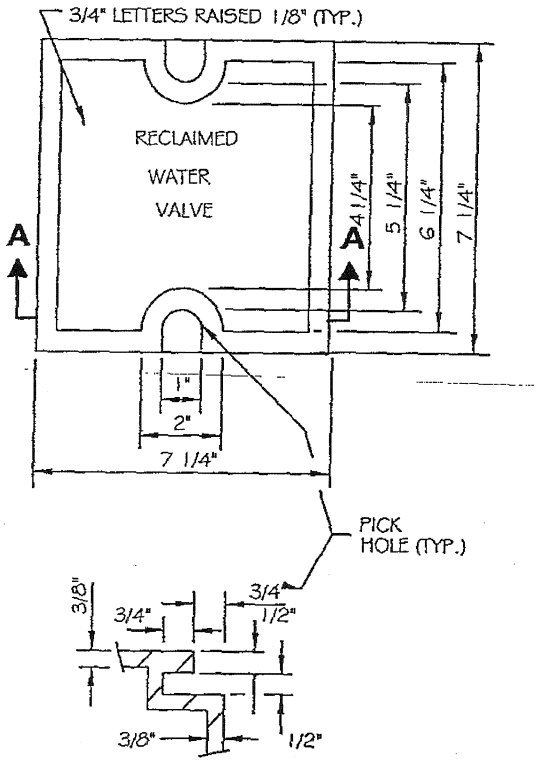
DETAIL NO.					DETAIL NO.
C- 405	CITY OF CHANDLER STANDARD DETAIL	**LARGE WATER USER (WITH LAKE) RECLAIMED WATER TURN-OUT**	APPROVED Elizabeth Wilson CITY ENGINEER		C- 405
NTS			DATE January 11, 2002		NTS



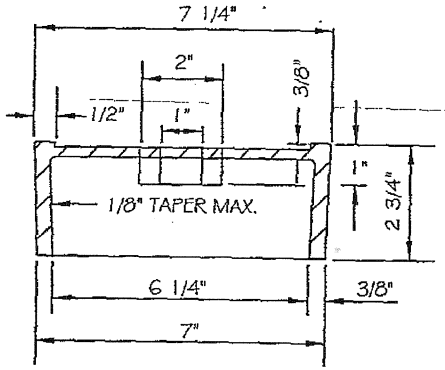
NOTES:

1. VALVE BOX SHALL BE ADJUSTED AND SET FLUSH TO THE FINISHED GRADE PRIOR TO PLACING OF THE FINISHED CONCRETE SURFACE.
2. USE SKIRTED LID PER COC STANDARD DETAIL C406-2
3. EXTENSION STEM WITH SQUARE SOCKET TO FIT 2" SQUARE VALVE NUT. EXTENSION TO VALVE STEMS REQUIRED ON ALL VALVES INSTALLED WHERE OPERATING NUT IS OVER 5' BELOW SURFACE. LENGTH TO FIT EACH INSTALLATION. OPERATING NUT TO BE HELD ON TOP OF EXTENSION WITH STOP NUT
4. STEM PAINTING. ALL STEEL TO HAVE PRIME COAT OF PAINT NO 1-D AND ONE HEAVY APPLICATION (FINISH COAT) OF PAINT NO. 9 AS PER MAG STANDARD SPECIFICATIONS SEC. 790.
5. ALL BACKFILL MATERIAL PLACED AS PART OF THE FINAL VALVE BOX ADJUSTMENT SHALL BE A.B.C. 1-SACK SLURRY AS PER COC STANDARD SPECIFICATION 4.

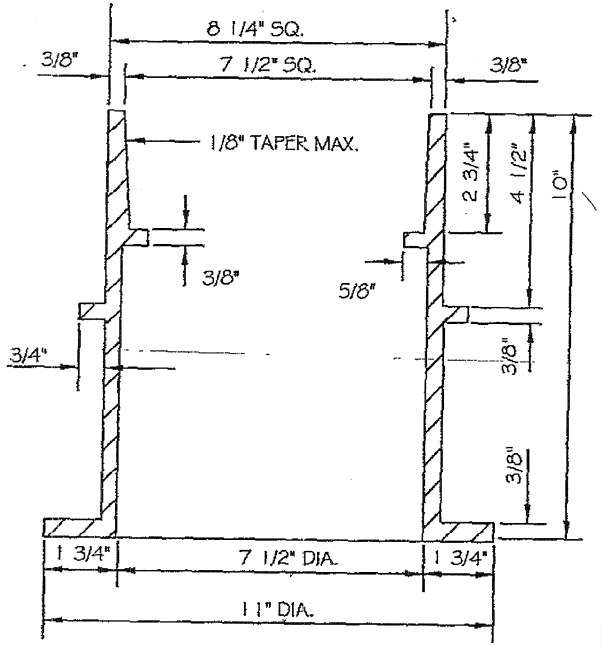
C-406 **REPLACES** **51A**	CITY OF CHANDLER STANDARD DETAIL	**VALVE BOX INSTALLATION (RECLAIMED WATER)**	APPROVED: Elizabeth A. Hoffing CITY ENGINEER DATE: January 11, 2002	DETAIL NO. **C- 406** PAGE 1 OF 2



SECTION



SECTION A - A
COVER

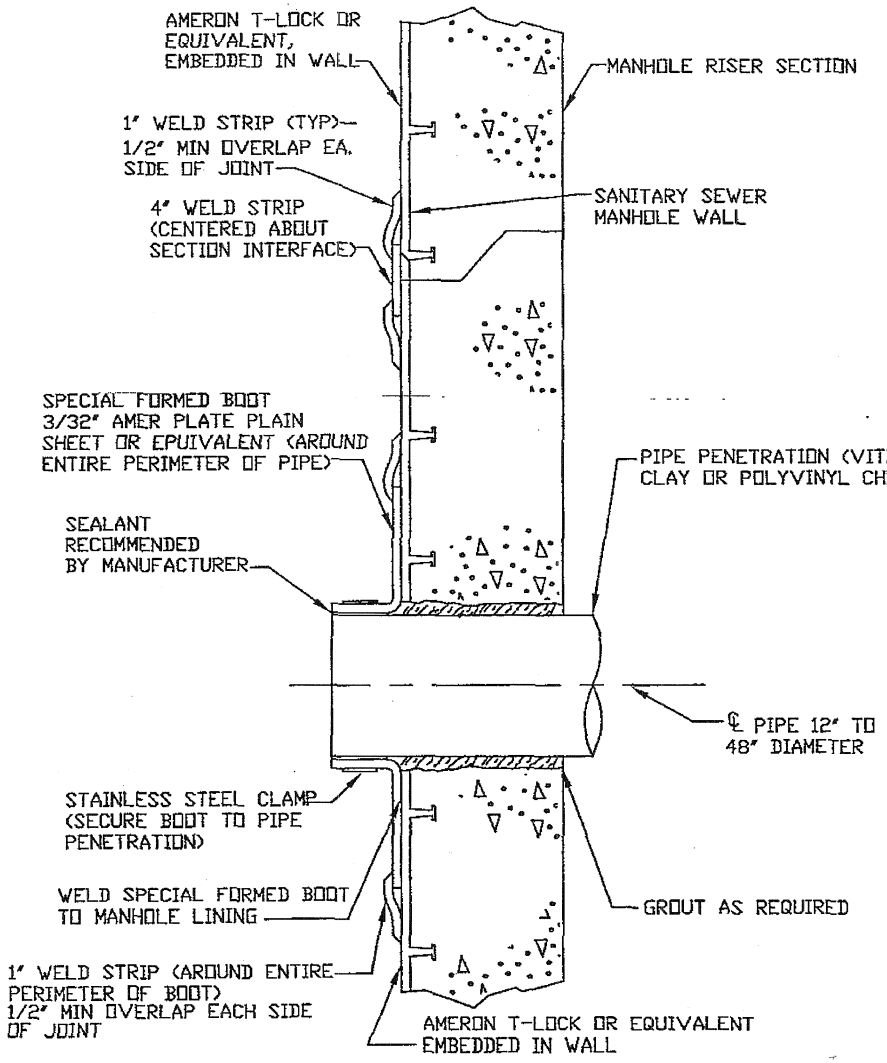


SECTION
VALVE BOX

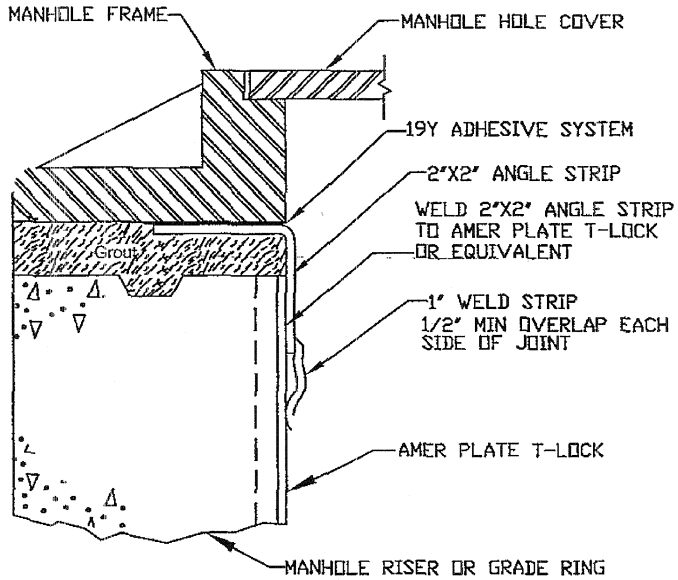
NOTES:

1. ALL MATERIAL SHALL BE CAST IRON PER ASTM. A-48, CLASS 30 B.
2. THE SURFACES OF THE COVER AND BOX WHICH COME IN CONTACT WITH EACH OTHER MUST BE SMOOTH AND FREE OF ALL CASTING RIDGES AND BURRS TO PROVIDE A SNUG FIT.
3. THE VALVE BOX SHALL HAVE A ROUND BOTTOM TO ACCOMMODATE RISER PIPE. THE TOP OF THE VALVE BOX SHALL BE SQUARE.
4. THE LID AND INSIDE AND OUTSIDE OF THE RISER PIPE SHALL BE COLORED PURPLE. COLOR MAY BE INCORPORATED INTO PIPE DURING MANUFACTURE OR PAINTED ONTO PIPE SURFACE. WHEN PAINTED THE PAINT SHALL BE SEYMOUR SAFETY PURPLE.
5. LETTERING SHALL BE RESTRICTED TO THAT SHOWN ON THE VALVE BOX COVER.

DETAIL NO.					
C- 406	CITY OF CHANDLER STANDARD DETAIL	VALVE BOX INSTALLATION (RECLAIMED WATER)	APPROVED: CITY ENGINEER	DETAIL NO.	C- 406
			DATE: 11-19-99		



PIPE PENETRATION DETAIL

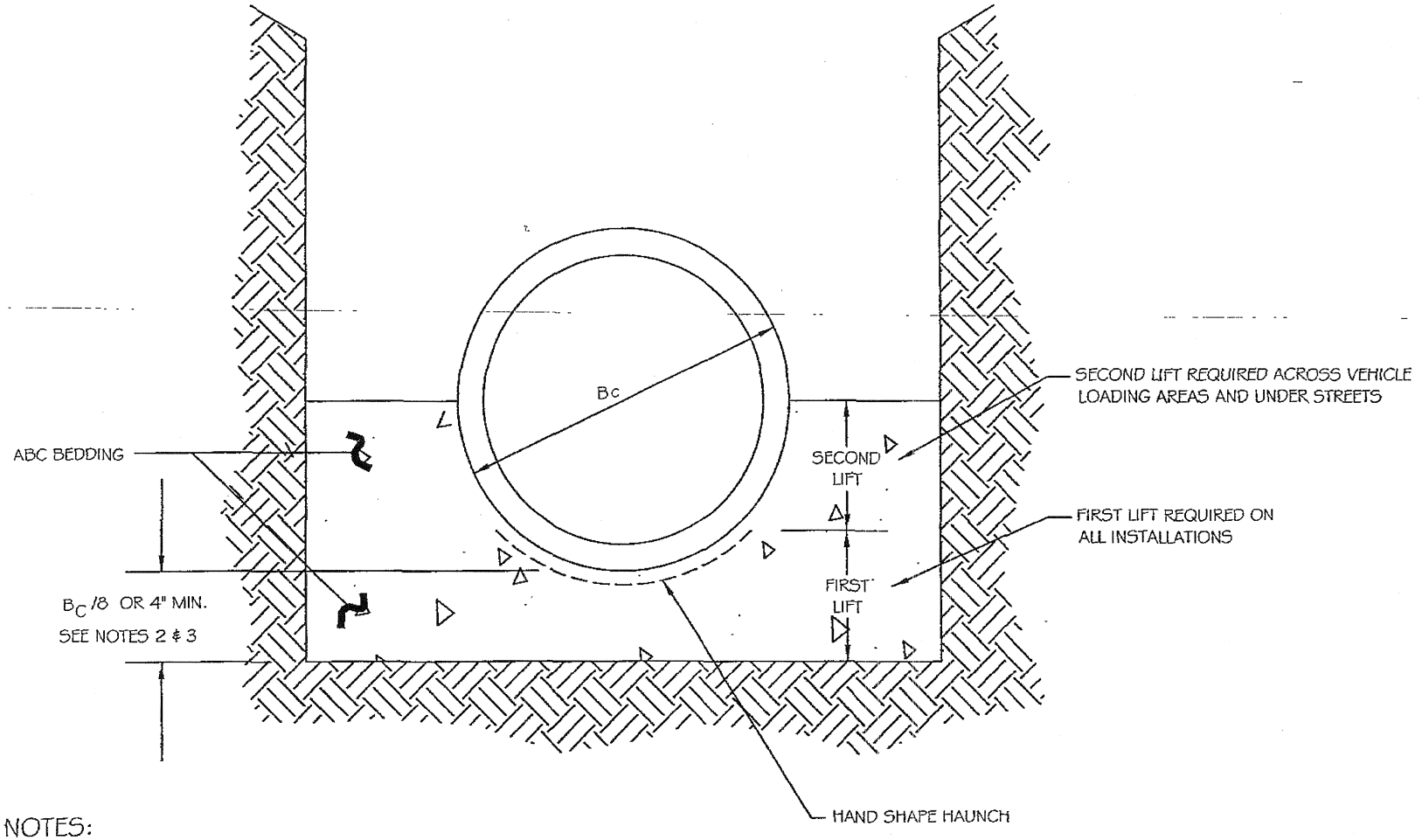


NOTE:
2" X 2" ANGLE STRIP TO BE ATTACHED TO MANHOLE FRAME USING 19Y ADHESIVE PRIOR TO SETTING FRAME.

MANHOLE FRAME TERMINATION DETAIL

NOTE:
ALL FIELD JOINTS FOR T-LOCK LINED MANHOLE SECTIONS SHALL BE TYPE P-1 JOINTS WITH 4" WELD STRIP WITH 2-1" WELD STRIPS SECURING THE JOINT STRIP IN PLACE.

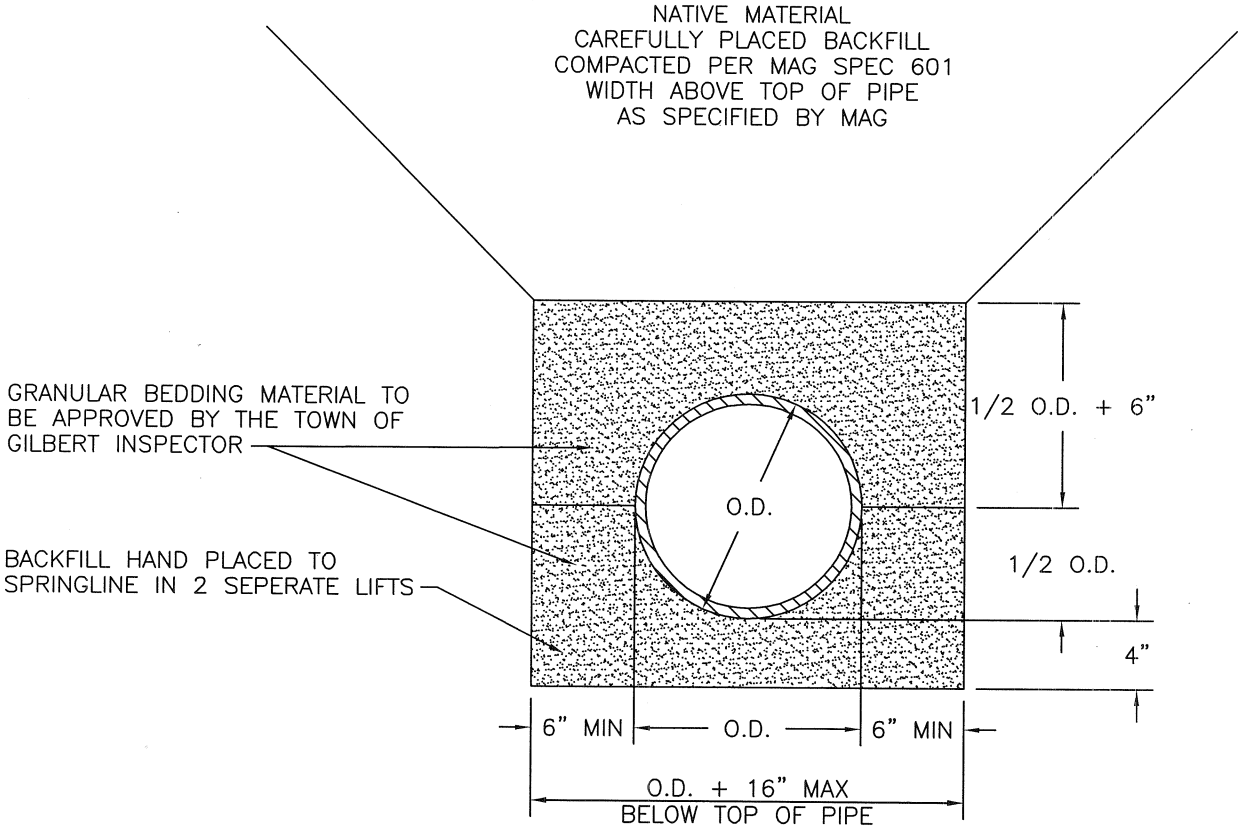
DETAIL NO.					DETAIL NO.
C-409	CITY OF CHANDLER STANDARD DETAIL	PIPE PENETRATION AND MANHOLE FRAME TERMINATION DETAIL	APPROVED: CITY ENGINEER	DATE: January 11, 2002	C-409
NTS					NTS



NOTES:

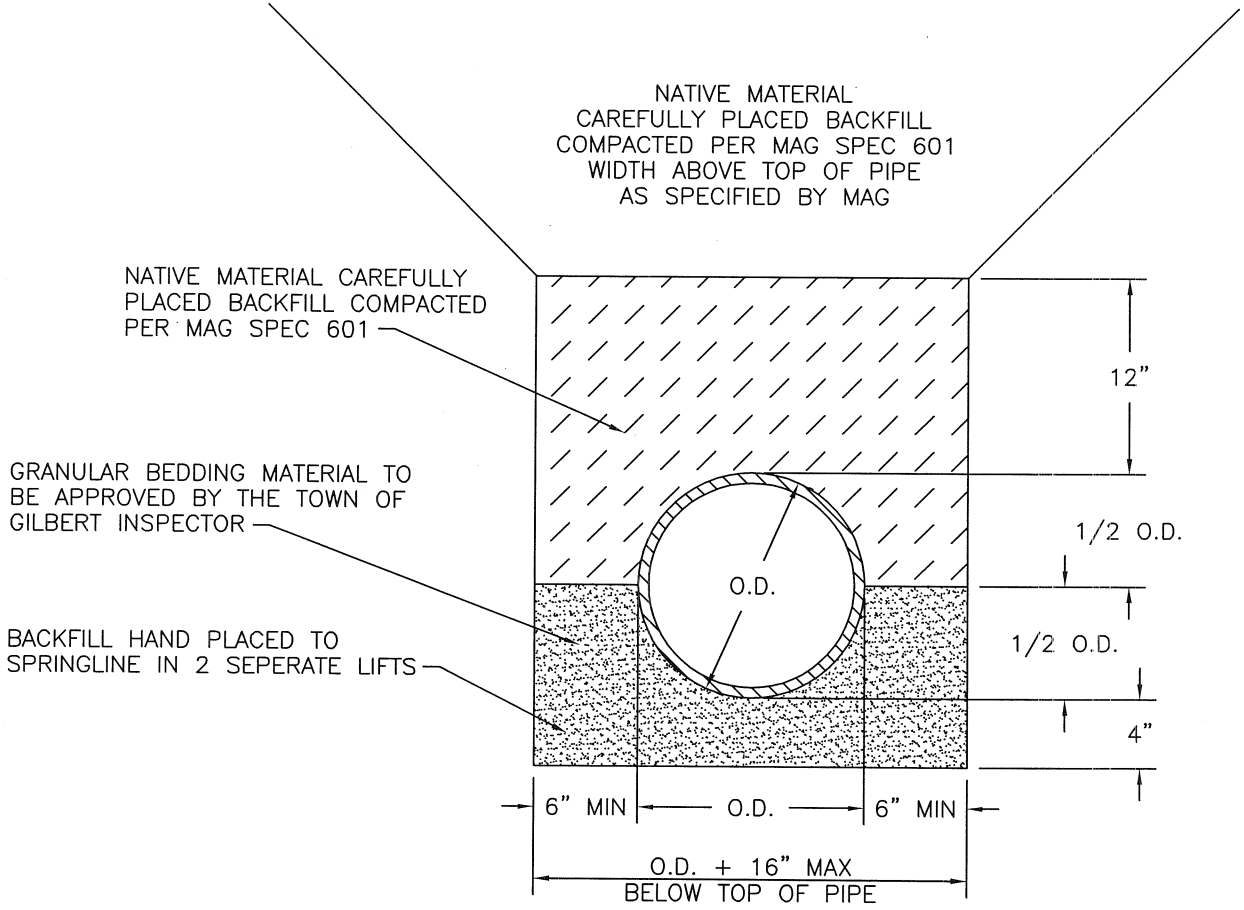
1. TRENCH WIDTH IN ACCORDANCE WITH MAG STD. TABLE 601-1.
2. MINIMUM 4" FOR PIPES 12" OR SMALLER.
3. MINIMUM 6" FOR PIPES LARGER THAN 12".

C-402 REPLACES 53	CITY OF CHANDLER STANDARD DETAIL	**PVC SEWER PIPE BEDDING DETAIL**	APPROVED: Elizabeth W. Graham CITY ENGINEER DATE: January 11, 2002	DETAIL NO. C-402 NTS



PVC SEWER PIPE BEDDING DETAIL
NTS

DETAIL NO. 86	TOWN OF GILBERT STANDARD DETAIL	BEDDING DETAIL PVC SEWER PIPE	REVISED 8/1/95	DETAIL NO. 86



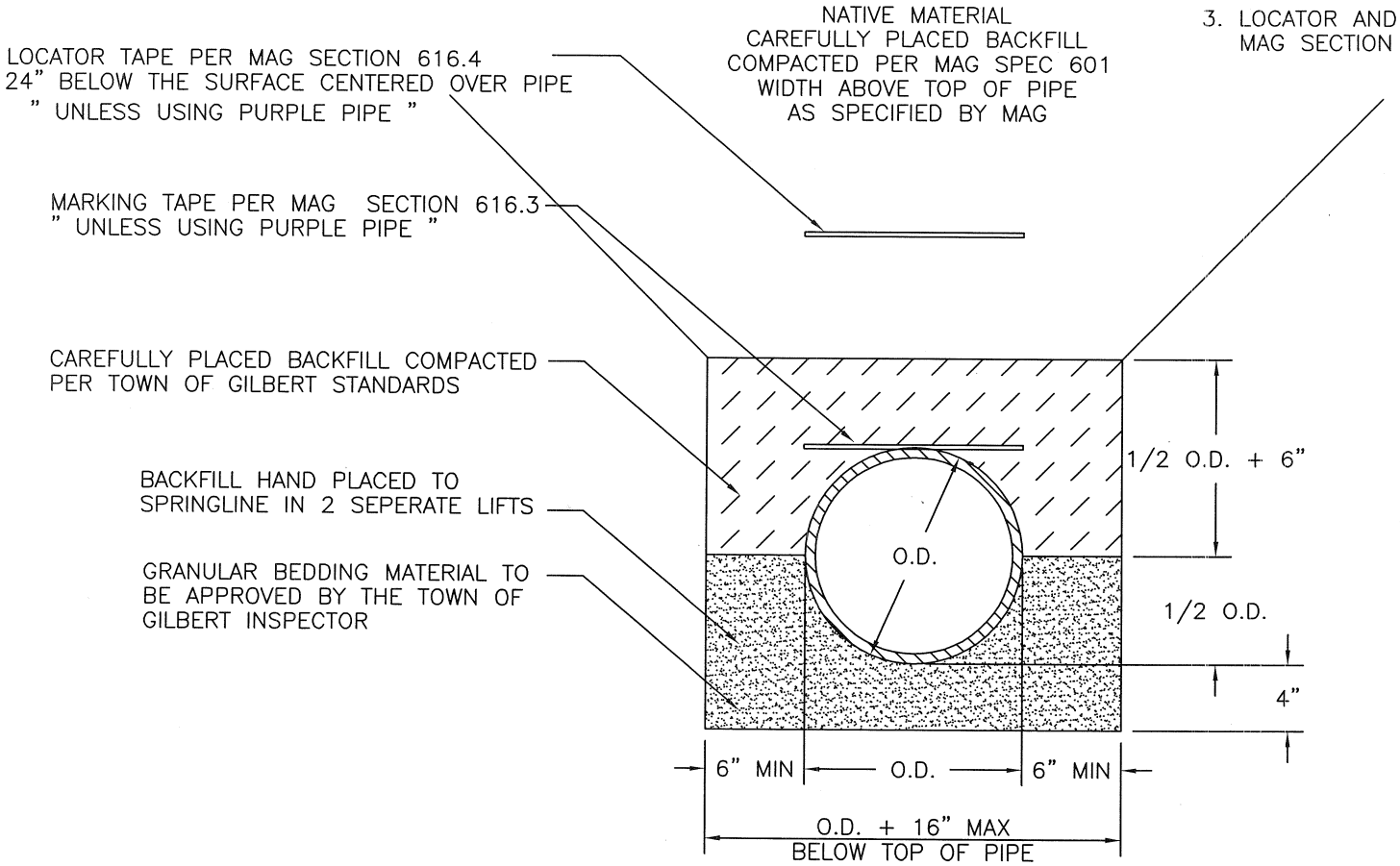
VCP SEWER PIPE BEDDING DETAIL

NTS

DETAIL NO. 87	TOWN OF GILBERT STANDARD DETAIL	BEDDING DETAIL VCP SEWER PIPE	REVISED 8/1/95	DETAIL NO. 87

RECLAIMED WATER NOTES

1. INSTALL IN ACCORDANCE WITH MAG SECTION 616
2. USE PURPLE PIPE MARKED RECLAIMED WATER CL 200 PSI 73° F , PVC 1120 ASTM D2241, SDR 21
3. LOCATOR AND MARKING TAPE AS SPECIFIED PER MAG SECTION 616 OR APPROVAL BY THE T.O.G.



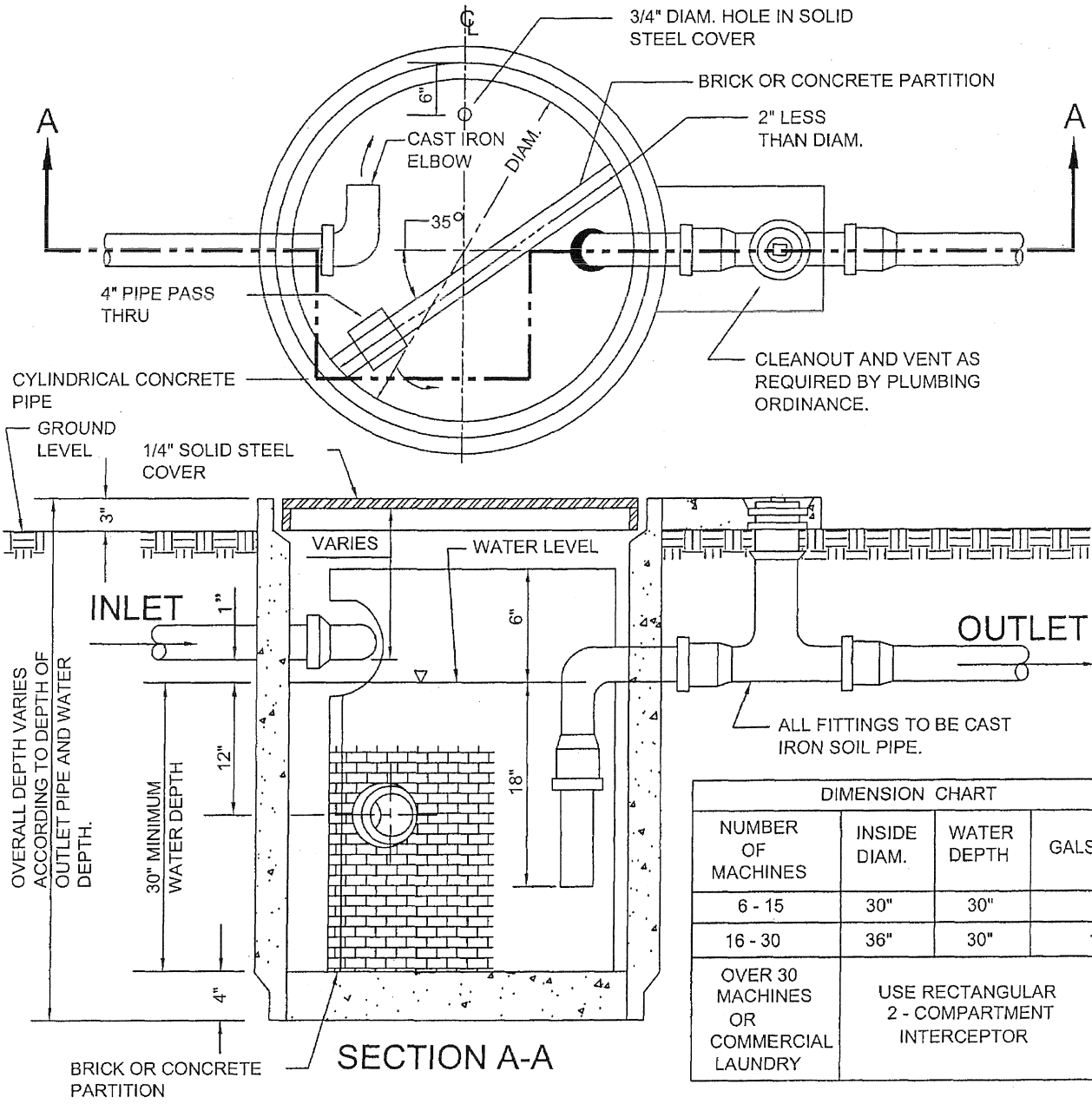
PVC RECLAIMED WATER PIPE BEDDING DETAIL

DETAIL NO. 88	TOWN OF GILBERT STANDARD DETAIL	BEDDING DETAIL RECLAIMED WATER LINE	REVISED 8/14/01	DETAIL NO. 88

STANDARD DETAIL G-710

CITY OF GLENDALE
ENGINEERING

LAUNDRY WASTE INTERCEPTOR

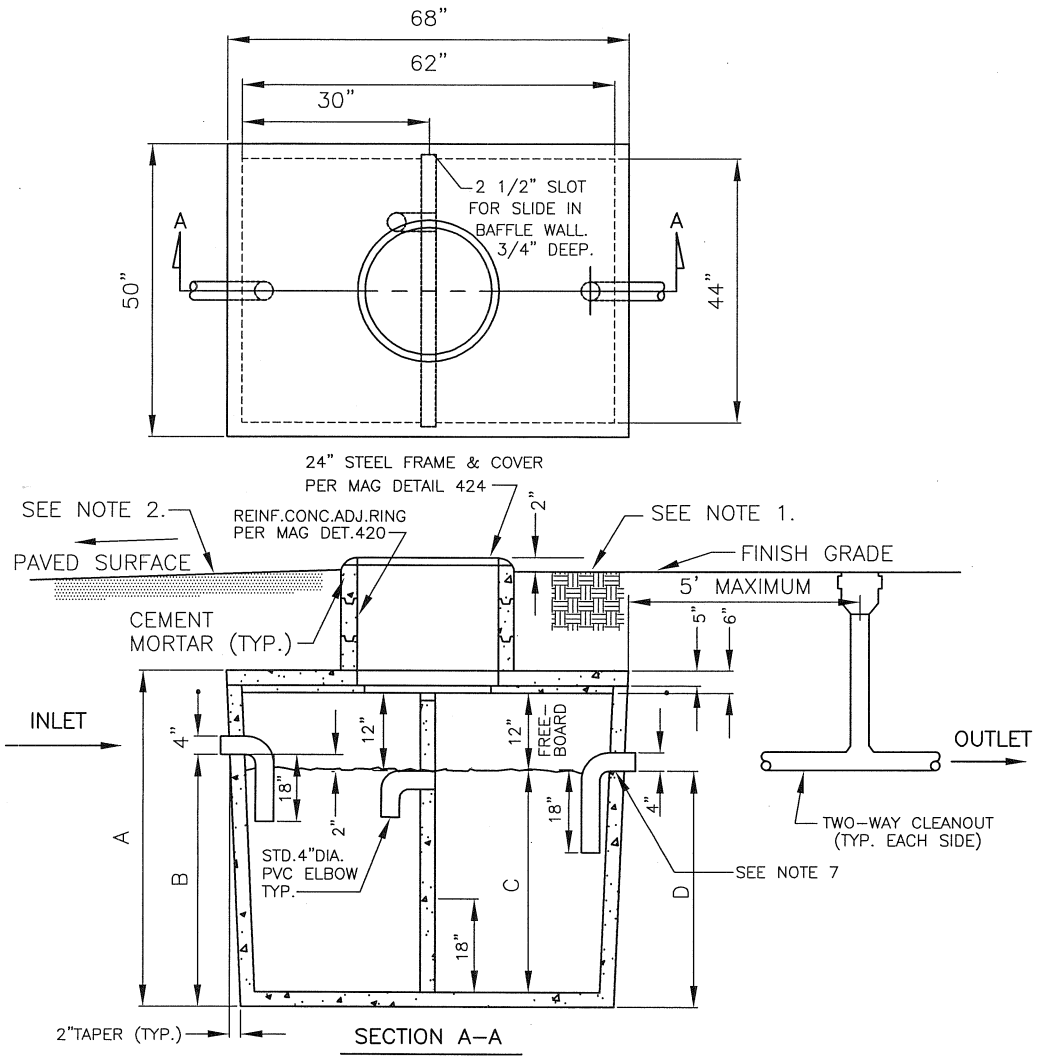


DIMENSION CHART			
NUMBER OF MACHINES	INSIDE DIAM.	WATER DEPTH	GALS
6 - 15	30"	30"	91
16 - 30	36"	30"	133
OVER 30 MACHINES OR COMMERCIAL LAUNDRY	USE RECTANGULAR 2 - COMPARTMENT INTERCEPTOR		

NOTE:
THE APPROVAL OF THE CITY PRETREATMENT OFFICER MUST BE OBTAINED BEFORE INSTALLATION. IF INSTALLED OUTSIDE BUILDING, ELEVATE THE SIDE WALLS ABOVE THE SURROUNDING GROUND SURFACE TO EXCLUDE SURFACE WATER. IF LOCATED IN A COVERED AREA WHICH IS PROPERLY PROTECTED AGAINST THE ENTRANCE OF RAIN WATER, THE TOP OF THE INTERCEPTOR MAY BE LEVEL WITH FLOOR. FOR INSTALLATION INSIDE A BUILDING, INTERCEPTOR SHALL CONFORM WITH BUILDING AND PLUMBING CODES.

APPROVED BY: Harry J. Bowles — CITY ENGINEER — 6/28/02 — DATE

REVISED: JUNE 2002



NOTES

1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER.
3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2-FEET OUTSIDE OF BLDG. FOUNDATION.
4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.
7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.
8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

TANK SIZE	A	B	C	D
350 GAL.	58"	41"	35"	38"
500 GAL.	69"	54"	48"	51"

LINT INTERCEPTOR

DETAIL NO. M-36.2

REV. 02/08/96

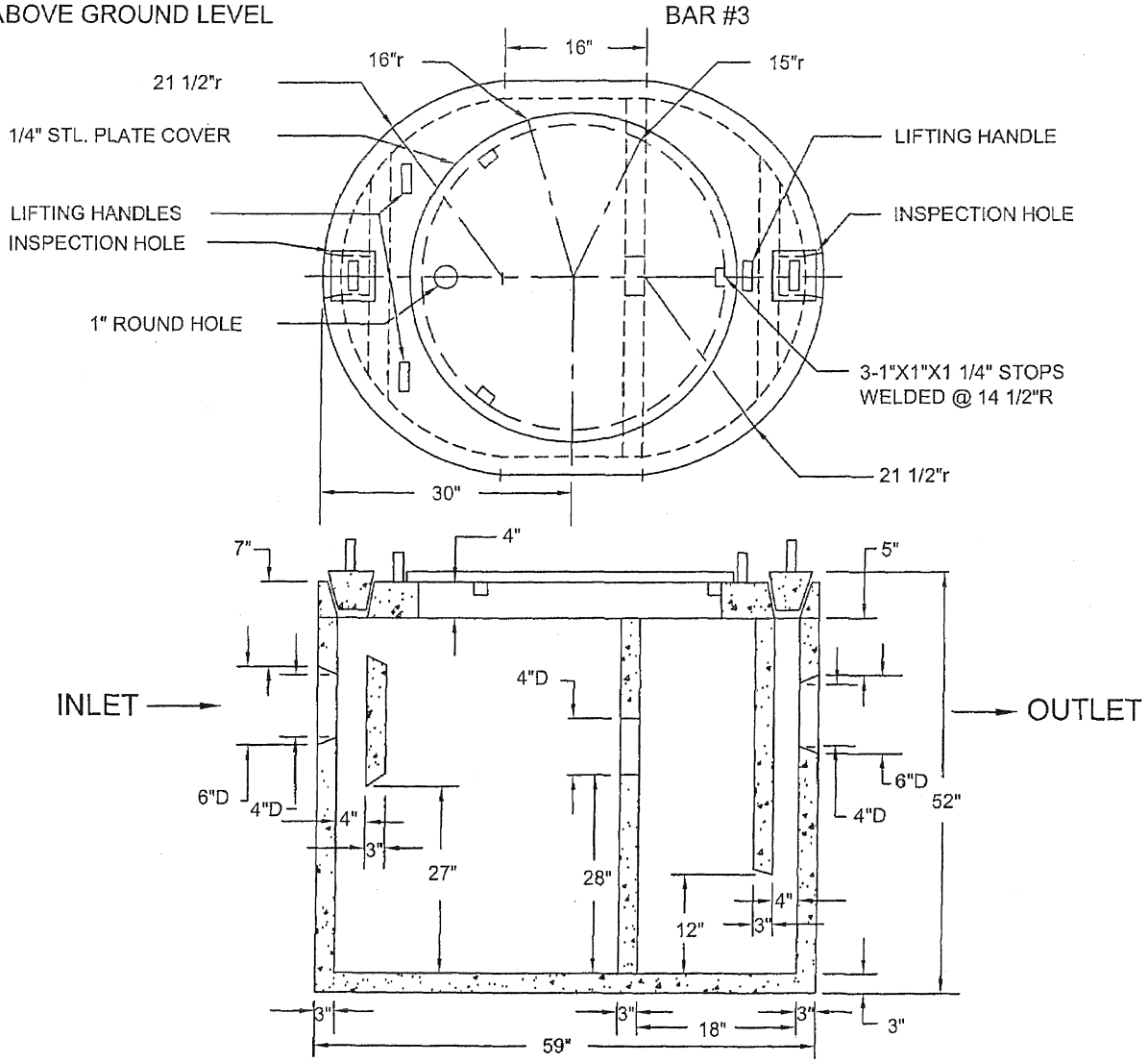
STANDARD DETAIL G-720

CITY OF GLENDALE
ENGINEERING

SAND AND OIL INTERCEPTOR

NOTE:
INSTALLATION OF INTERCEPTOR MUST BE AT LEAST 2' OUTSIDE OF FOUNDATION & THE TOP OF INTERCEPTOR BE 3" ABOVE GROUND LEVEL

MATERIAL SPECIFICATIONS:
CONCRETE COMPRESSIVE STRENGTH OF 3000 P.S.I. AT 28 DAYS WITH REINFORCING BAR #3



EXCAVATION SIZE

TANK SIZE	LENGTH	WIDTH	DEPTH FROM UNDER PLUMBING
350 GAL	6'	4'	42"

APPROVED BY: Larry J Broyles
CITY ENGINEER

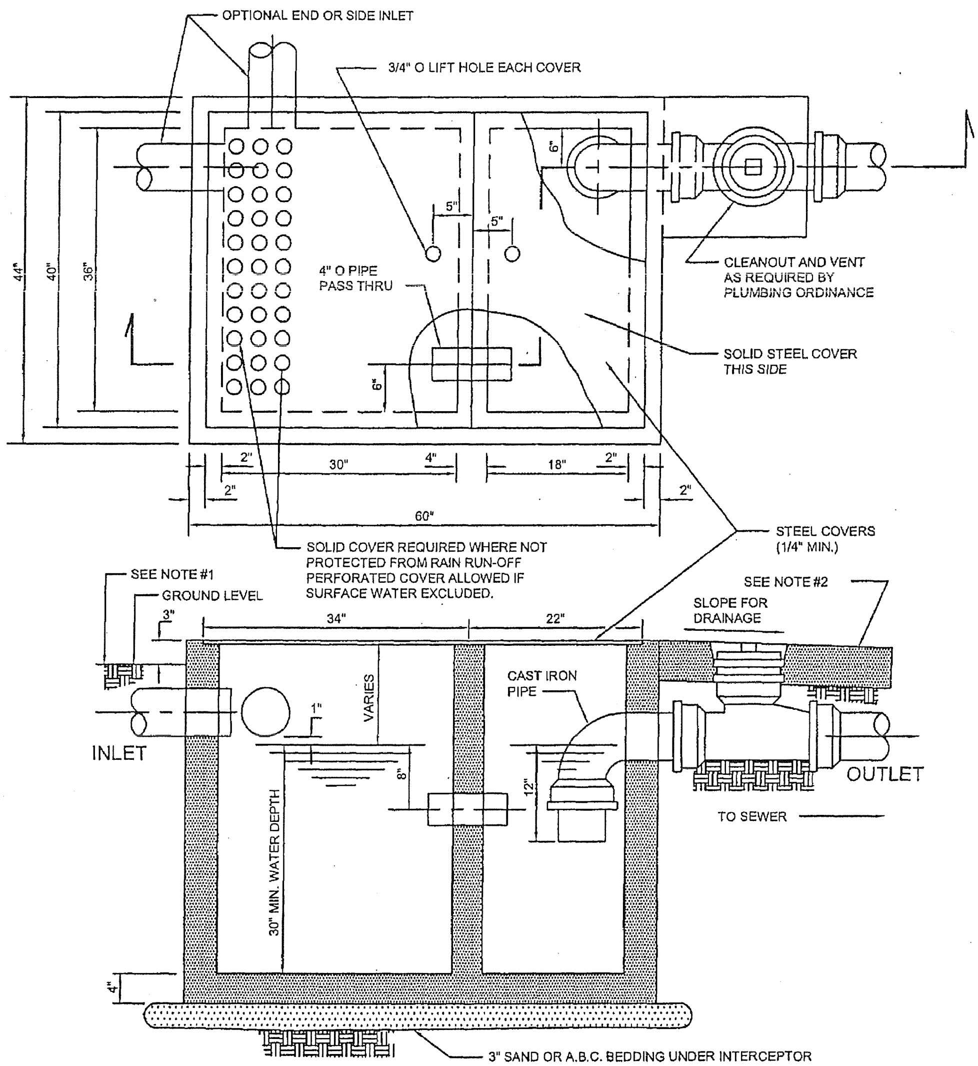
6/28/02
DATE

REVISED : JUNE 2002
PREVIOUS :

STANDARD DETAIL G-722

CITY OF GLENDALE
ENGINEERING

SAND AND OIL INTERCEPTOR FOR A SERVICE STATION



NOTES:

1. IF LOCATED OUTSIDE BUILDING, ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN ABOVE, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A SURFACED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER. IF SO PROTECTED, THE INTERCEPTOR MAY BE INSTALLED LEVEL WITH FLOOR AS SHOWN.
3. DIMENSIONS SHOWN ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR.

APPROVED BY: Larry J. Broyles (signature) — CITY ENGINEER   6/28/02 — DATE

REVISED : JUNE 2002

PREVIOUS :

STANDARD DETAIL G-724

CITY OF GLENDALE
ENGINEERING

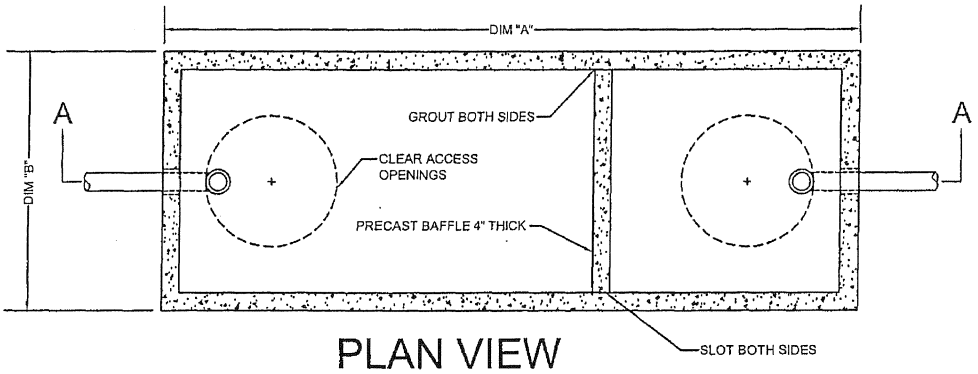
GREASE/OIL INTERCEPTOR (FOOD ESTABLISHMENTS)

NOTES:

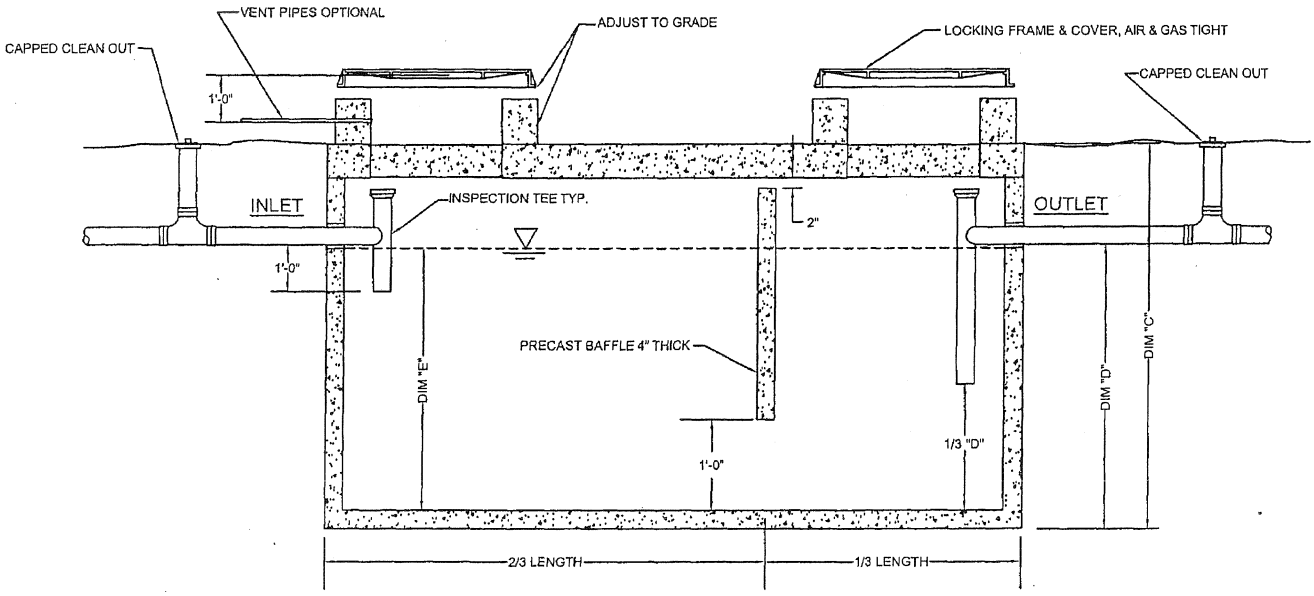
1. CONCRETE: 28 DAY $f'c$=4500 P.S.I.
2. REBAR: ASTM A615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN: AC1318-83 BUILDING CODE
   ASTM C-857 MINIMUM STRUCTURAL DESIGN
   LOADING FOR UNDERGROUND PRECAST
   CONCRETE UTILITY STRUCTURES
5. LOADS: H-20 TRUCK WHEEL W/30% IMPACT PER AASHTO
6. FILL W/CLEAN WATER PRIOR TO START UP OF SYSTEM
7. CONCTRACTOR TO SUPPLY & INSTALL ALL PIPING AND SANITARY TEES. 4 CLEAN OUTS FOR CLEANING TOWARD TRAP AND FOR CLEANING AWAY FROM TRAP ON BOTH THE INLET AND OUTLET / ALT. DUAL SWEEP CLEAN OUTS
8. GRAY WATER ONLY. BLACK WATER SHALL BE CARRIED BY SEPERATE SEWER.

SIZING CHART

GALLON CAPACITY	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"
600	7'-0"	4'-8"	7'-0"	3'-6"	3'-2"
750	7'-0"	4'-8"	7'-0"	4'-3"	3'-11"
1000	9'-0"	5'-0"	7'-2"	4'-2"	3'-10"
1250	9'-0"	5'-0"	7'-2"	5'-2"	4'-10"
1500	11'-2"	5'-8"	7'-2"	4'-4"	4'-0"
1750	11'-2"	5'-8"	7'-2"	4'-11"	4'-7"
2000	12'-8"	6'-8"	8'-0"	4'-7"	3'-10"
2500	12'-8"	6'-8"	8'-0"	5'-6"	4'-9"
2750	12'-8"	6'-8"	8'-0"	6'-0"	5'-3"
3000	15'-7"	9'-7"	8'-6.5"	5'-0"	3'-9"
4000	15'-7"	9'-7"	8'-6.5"	6'-3"	5'-0"
5000	19'-11"	9'-11"	8'-11"	6'-2"	4'-9"
6000	19'-11"	9'-11"	10'-5"	7'-2"	5'-9"



PLAN VIEW



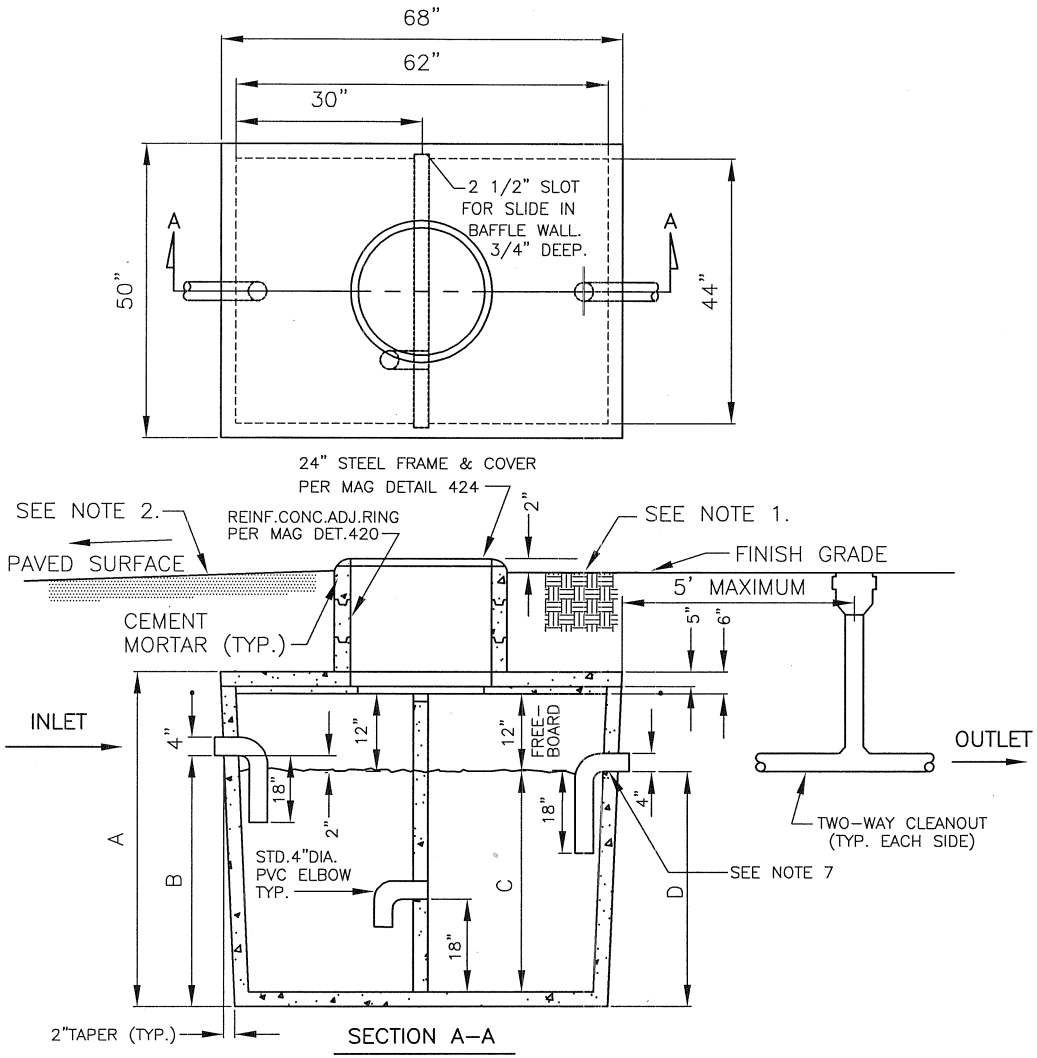
SECTION AA

APPROVED BY: Larry J. Broyles — CITY ENGINEER

4/28/02 — DATE

REVISED : JUNE 2002

PREVIOUS :



NOTES

1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER.
3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2-FEET OUTSIDE OF BLDG. FOUNDATION.
4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.
7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.
8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

TANK SIZE	A	B	C	D
350 GAL.	58"	41"	35"	38"
500 GAL.	69"	54"	48"	51"

GREASE, OIL, AND SAND INTERCEPTOR

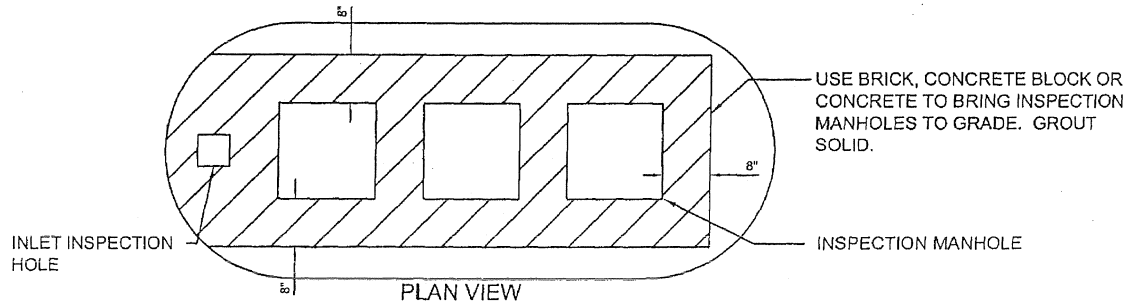
DETAIL NO. M-36.1

REV. 02/08/96

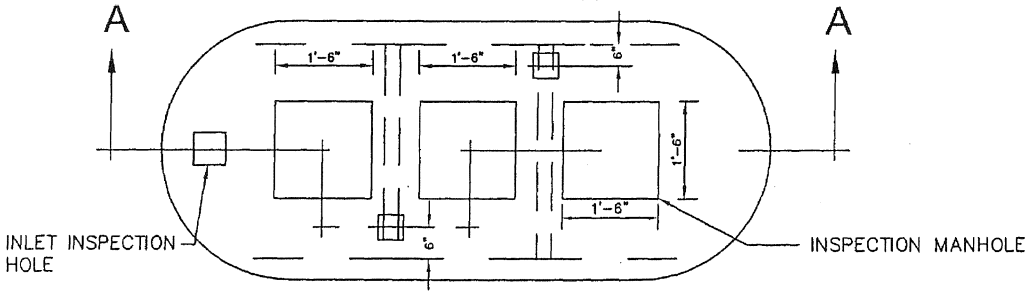
STANDARD DETAIL G-725

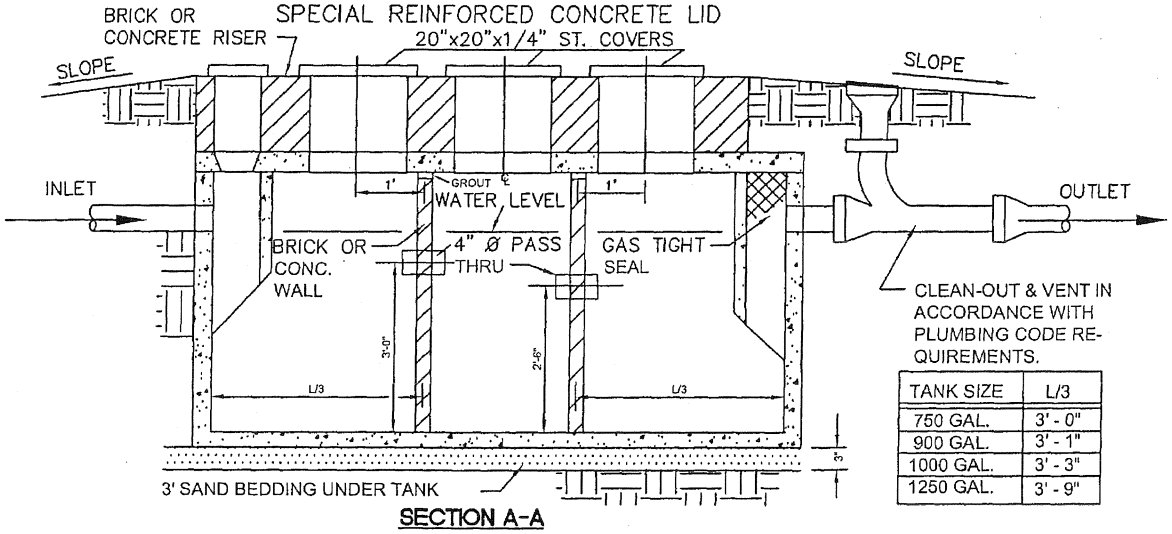
CITY OF GLENDALE
ENGINEERING

THREE CHAMBER INDUSTRIAL WASTE INTERCEPTOR



BRICK OR CONCRETE RISER FOR INSPECTION MANHOLE





SECTION A-A

TANK SIZE	L/3
750 GAL.	3' - 0"
900 GAL.	3' - 1"
1000 GAL.	3' - 3"
1250 GAL.	3' - 9"

CONSTRUCTION NOTES:

1) NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING-MUST BE MINIMUM OF 2' OUTSIDE OF BUILDING FOUNDATION.
2) PRE-CAST SEPTIC TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
3) THE APPROVAL OF THE INDUSTRIAL WASTE OFFICER MUST BE OBTAINED BEFORE INSTALLATION.
4) ELEVATE THE TOP OF THE INTERCEPTOR 3" ABOVE THE SURROUNDING GROUND SURFACE, TO EXCLUDE SURFACE WATER.

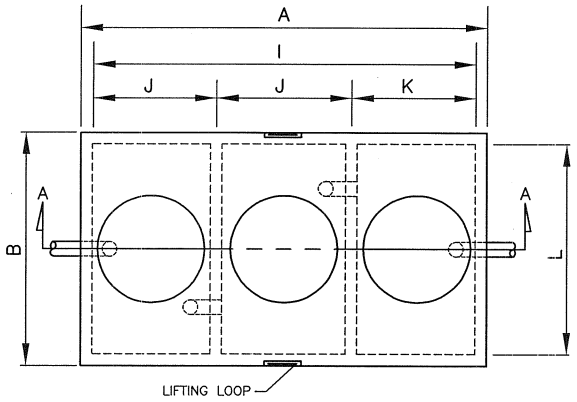
APPROVED BY: Larry J. Broyles
CITY ENGINEER

6/28/02
DATE

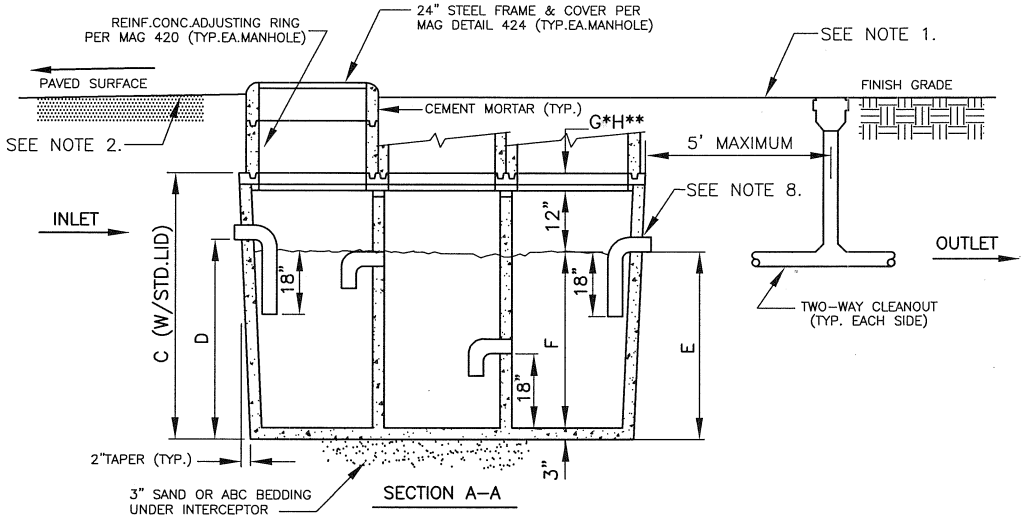
REVISED: JUNE 2002

NOTES

1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN–OFF WATER.
3. DIMENSIONS SHOWN ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR.
4. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2–FEET OUTSIDE OF BUILDING FOUNDATION.
5. PRE–CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
6. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
7. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC. SEC. 206.
8. INLET AND OUTLET TO BE WATER TIGHT TO STRUCTURE.



PLAN VIEW



SECTION A–A

TANK SIZE	A	B	C	D	E	F	G	H	I	J	K	L
750	102"	50"	69"	54"	51"	48"	6"	6"	96"	31"	31"	44"
1050	125"	61"	64"	48"	46"	43"	6"	8"	119"	40"	39"	55"
1250	125"	61"	72"	56"	54"	51"	6"	8"	119"	40"	39"	55"
1500	125"	61"	82"	66"	64"	61"	6"	8"	119"	40"	39"	55"
2000	156"	81"	71"	53"	51"	48"	8"	10"	150"	51"	48"	75"
2500	156"	81"	80"	62"	60"	57"	8"	10"	150"	51"	48"	75"

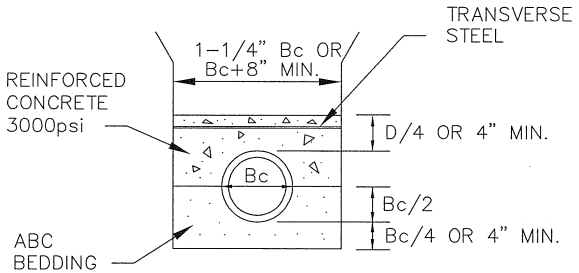
INDUSTRIAL WASTE INTERCEPTOR

DETAIL NO. M–36.3

REV. 01/01/04

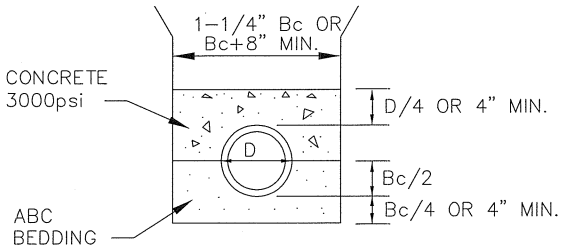
ALLOWABLE V.C.P. TRENCH LOADING

PIPE SIZE (INCHES)	V.C.P. THREE EDGE BEARING STRENGTH MIN.	ALLOWABLE TRENCH LOAD PER CLASS OF BENDING SOIL WT.=130#/CU. FT. SAFETY FACTOR=1.5		
		CLASS A–I L.F.=3.4	CLASS A L.F.=2.8	CLASS B–I L.F.=2.2
8	2200	4987	4107	3227
10	2400	5440	4480	3520
12	2600	5893	4853	3813
15	2900	6573	5413	4253
18	3300	7480	6160	4840
21	3850	8727	7187	5647
24	4400	9973	8213	6453
27	4400	10653	8773	6893
30	5000	11333	9333	7333
33	5500	12467	10267	8067
36	6000	13600	11200	8800
39	6600	14960	12320	9680



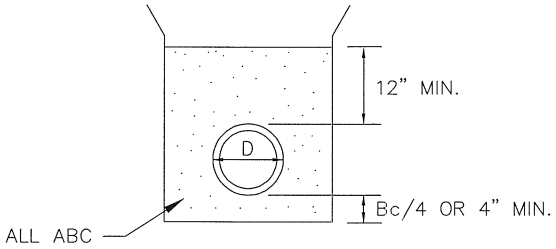
CLASS A–1

LOAD FACTOR: 3.4 REINFORCED CONCRETE, p=0.4%



CLASS A

LOAD FACTOR: 2.8 PLAIN CONCRETE



CLASS B–I

LOAD FACTOR: 2.2 ABC ENCASEMENT

NOTES

MAG SECTION 601 AND CITY OF GOODYEAR SUPPLEMENT APPLIES FOR FOUNDATION, BEDDING, BACKFILL, MATERIALS AND COMPACTION.

DETAIL NO. G-3420	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	V.C.P. TRENCH LOADING	DETAIL NO. G-3420

8" V.C.P. 3 Edge Bearing Strength=2200 #L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	18"	24"	30"	36"	42"	Wider Than 42"	
	CLASS OF BEDDING						
6	B-1						6
8							8
10							10
12							12
14							14
16							16
18							18
20	A						20

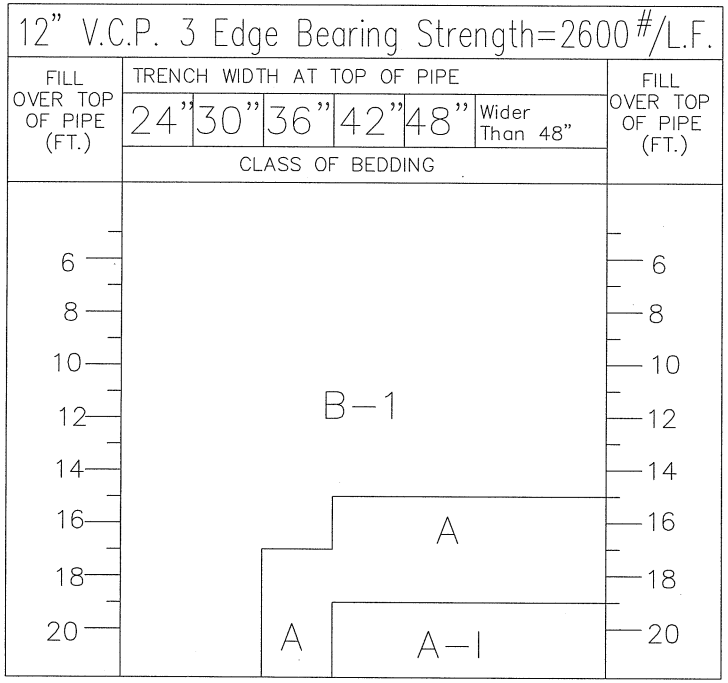
10" V.C.P. 3 Edge Bearing Strength=2400 #L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	24"	30"	36"	42"	48"	Wider Than 48"	
	CLASS OF BEDDING						
6	B-1						6
8							8
10							10
12							12
14							14
16							16
18							18
20	A						20

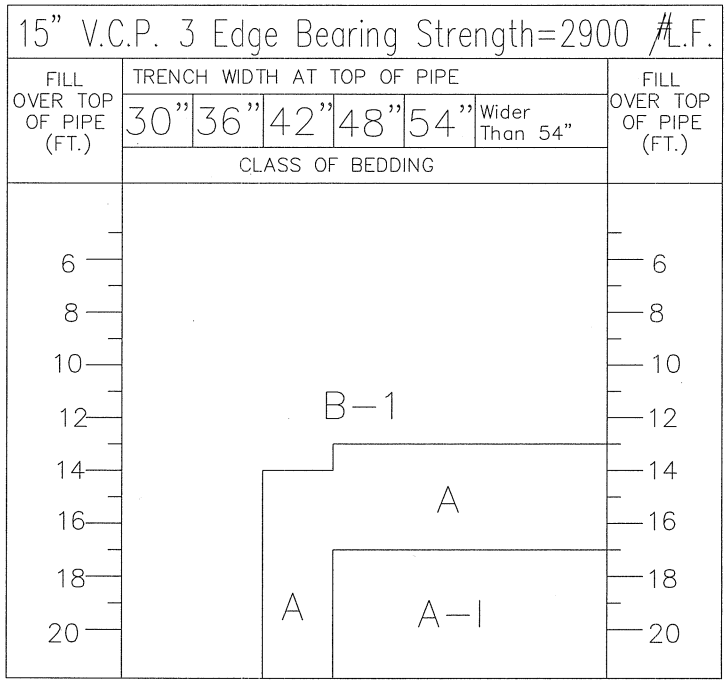
SEE DETAIL G-3420 FOR BEDDING DETAILS

DETAIL NO. G-3421	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	8" & 10" V.C.P. TRENCH LOADING	DETAIL NO. G-3421

12" V.C.P. 3 Edge Bearing Strength=2600 #/L.F.

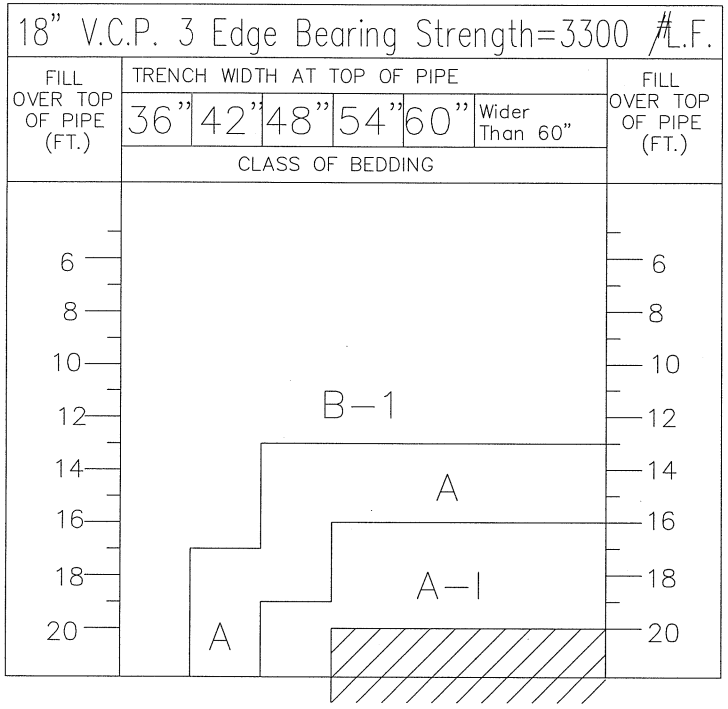


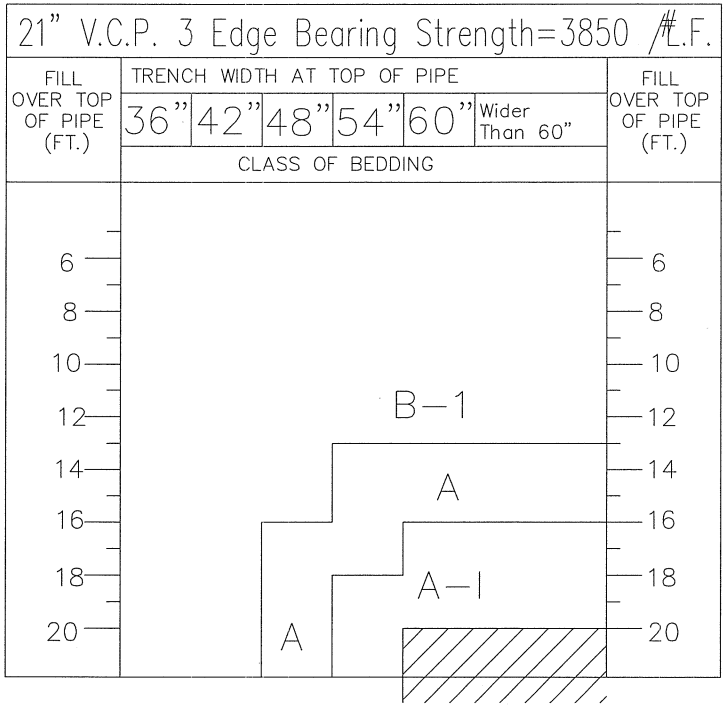
15" V.C.P. 3 Edge Bearing Strength=2900 #L.F.



SEE DETAIL G-3420 FOR BEDDING DETAILS

DETAIL NO. G-3422	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	12" & 15" V.C.P. TRENCH LOADING	DETAIL NO. G-3422



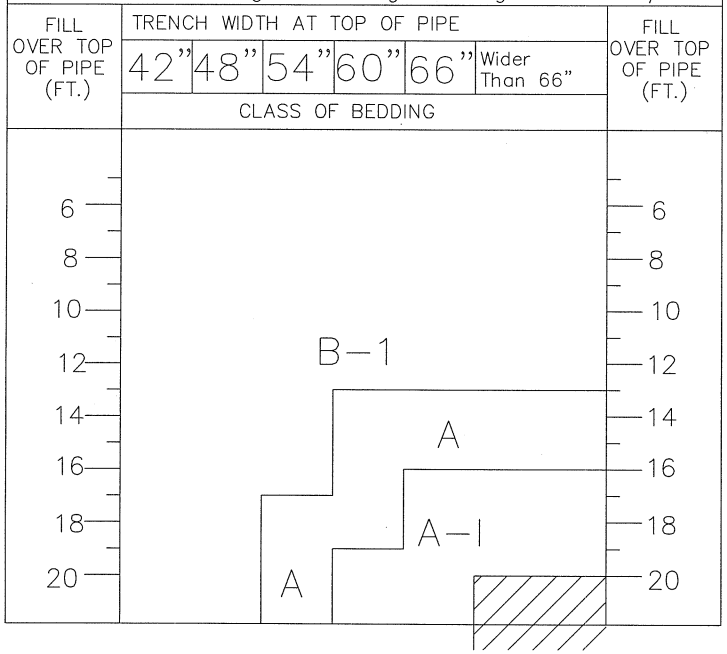


SEE DETAIL G-3420 FOR BEDDING DETAILS

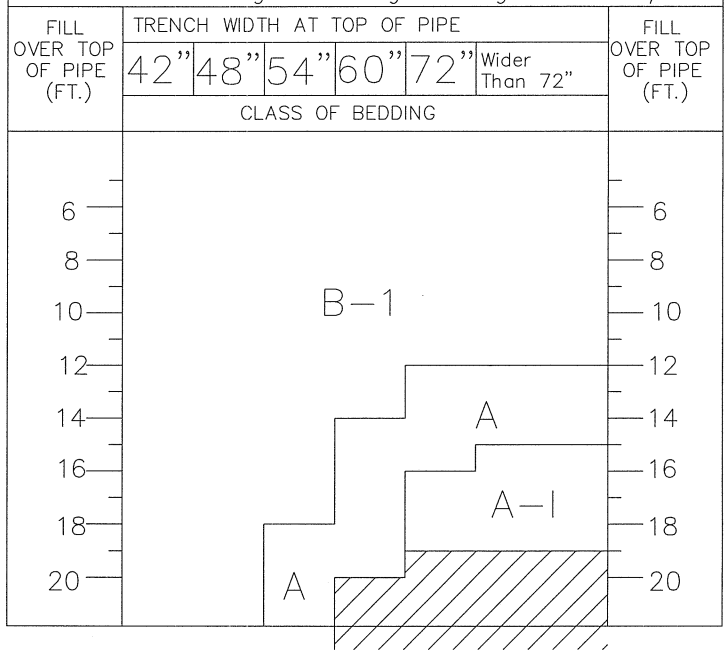
REQUIRES DESIGN ACTION

DETAIL NO. G-3423	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	18" & 21" V.C.P. TRENCH LOADING	DETAIL NO. G-3423

24" V.C.P. 3 Edge Bearing Strength=4400 #/L.F.



27" V.C.P. 3 Edge Bearing Strength=4700 #/L.F.

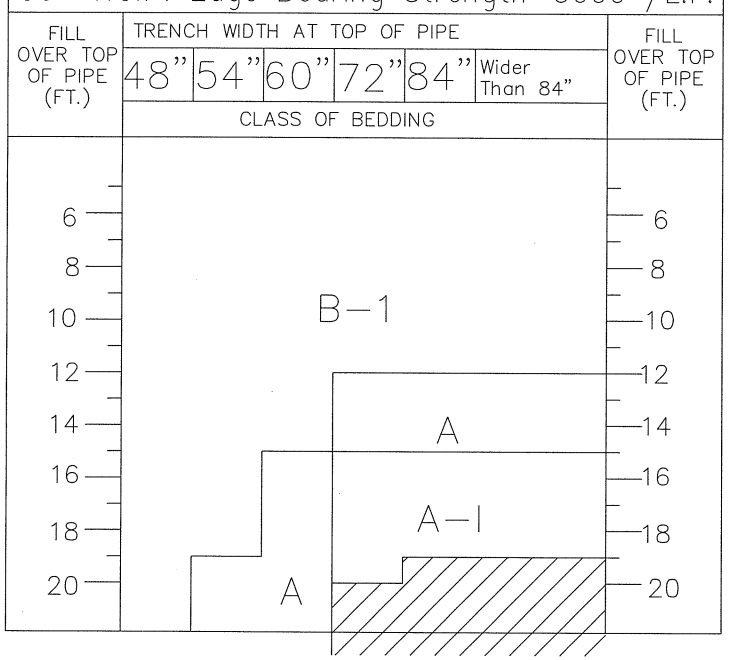


REQUIRES DESIGN ACTION

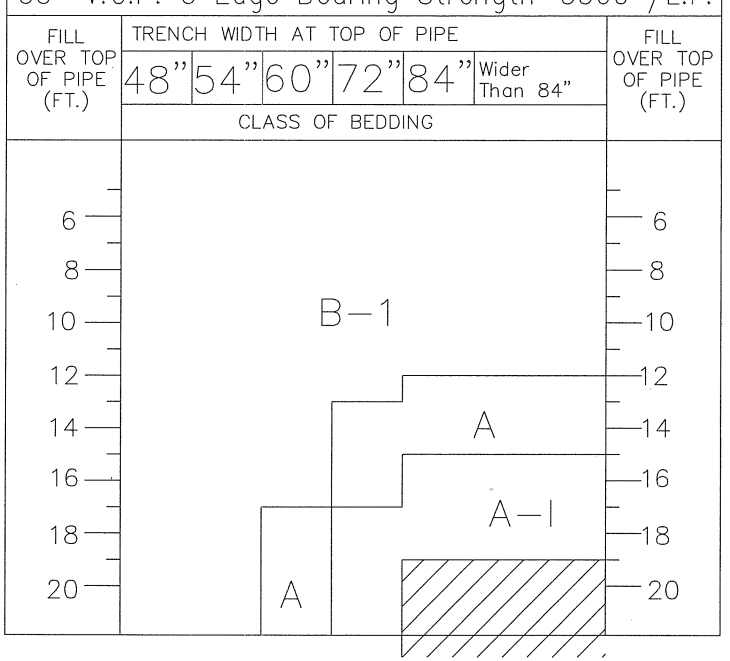
SEE DETAIL G-3420 FOR BEDDING DETAILS

DETAIL NO. G-3424	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	24" & 27" V.C.P. TRENCH LOADING	DETAIL NO. G-3424

30" V.C.P. Edge Bearing Strength=5000 #L.F.



33" V.C.P. 3 Edge Bearing Strength=5500 #L.F.

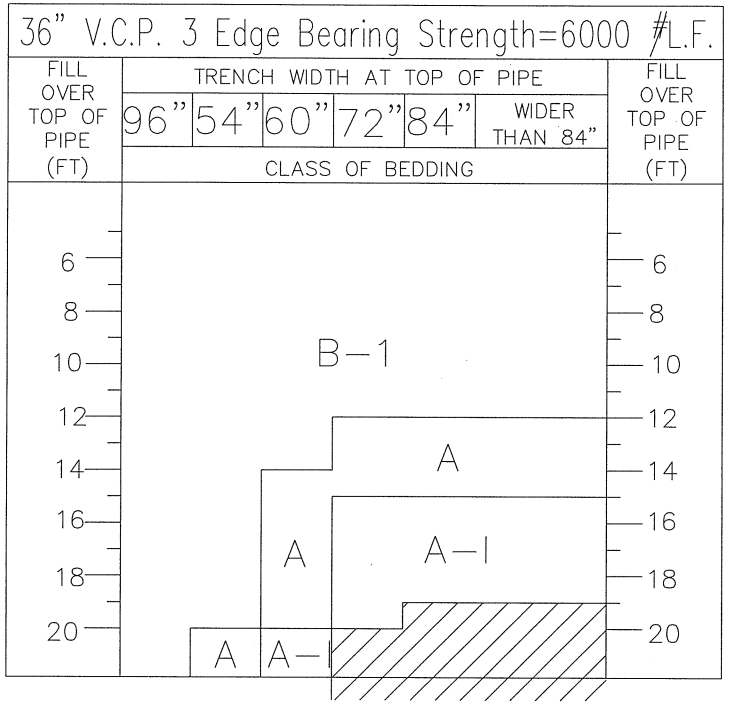


REQUIRES DESIGN ACTION

SEE DETAIL G-3425 FOR BEDDING DETAILS

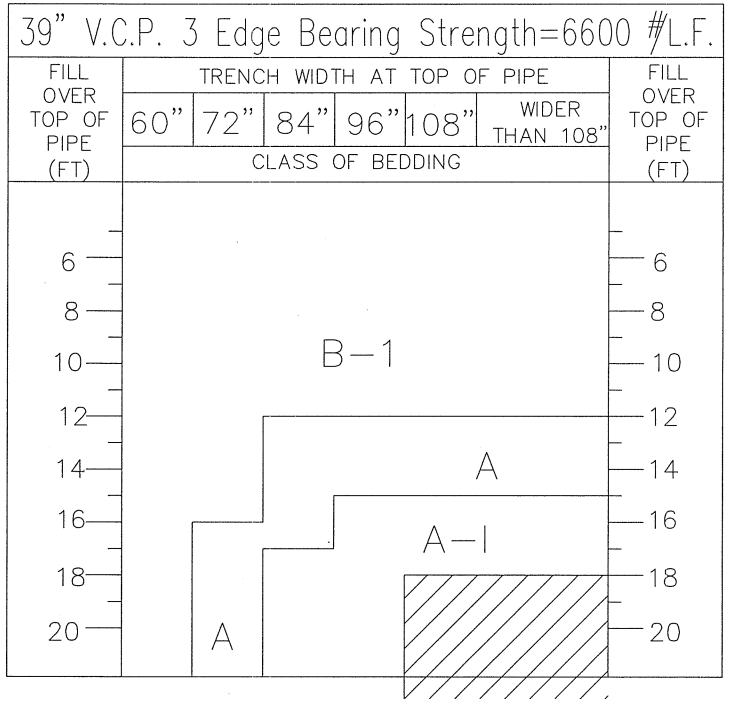
DETAIL NO. G-3425	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	30" & 33" V.C.P. TRENCH LOADING	DETAIL NO. G-3425

36" V.C.P. 3 Edge Bearing Strength=6000 #L.F.



REQUIRES DESIGN ACTION

39" V.C.P. 3 Edge Bearing Strength=6600 #L.F.



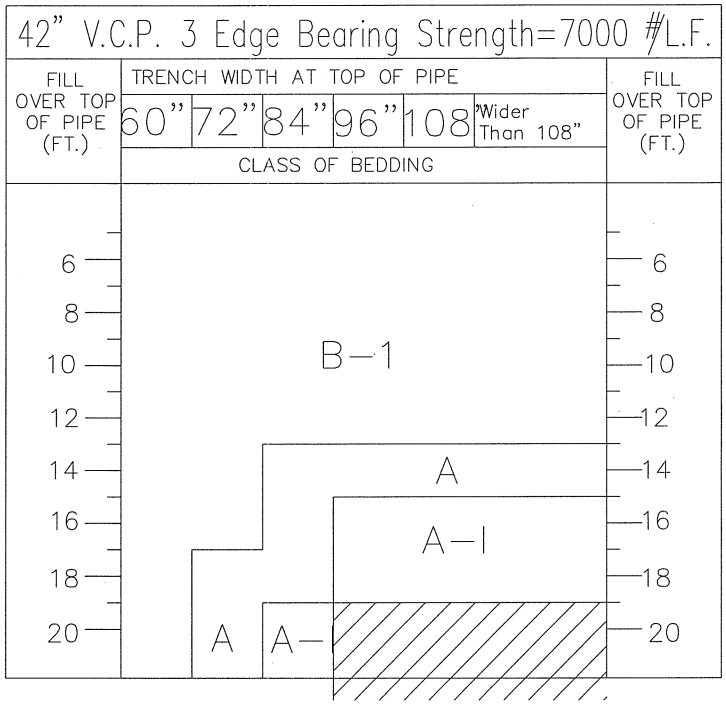
SEE DETAIL G-2420 FOR BEDDING DETAILS

DETAIL NO. G-3426	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	36" & 39" V.C.P. TRENCH LOADING	DETAIL NO. G-3426

ALLOWABLE V.C.P. TRENCH LOADING

PIPE SIZE (Inches)	V.C.P. Three Edge Bearing Strength Min.	ALLOWABLE TRENCH WIDTH PER CLASS OF BEDDING SOIL WT.=130 #Cu. Ft.–Safety Factor=1.5			
		Class A–1 L.F.=3.4	Class A L.F.=2.8	Class B–1 L.F.=2.2	
42	7000	15867	13067	10267	

42" V.C.P. 3 Edge Bearing Strength=7000 #L.F.



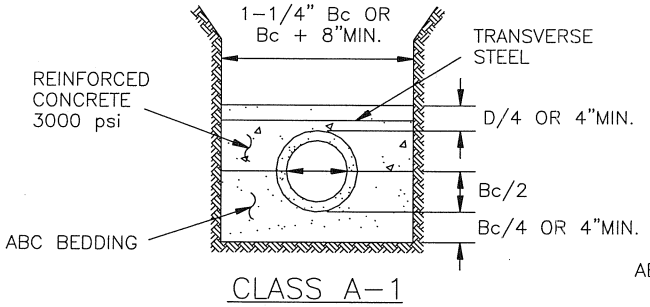
SEE DETAIL G–3420 FOR BEDDING DETAILS

REQUIRES DESIGN ACTION

DETAIL NO. G-3427	CITY OF GOODYEAR STANDARD DETAIL	APPROVED BY: Goodyear Standards and Policies Committee 7/97	42" V.C.P. TRENCH LOADING	DETAIL NO. G-3427

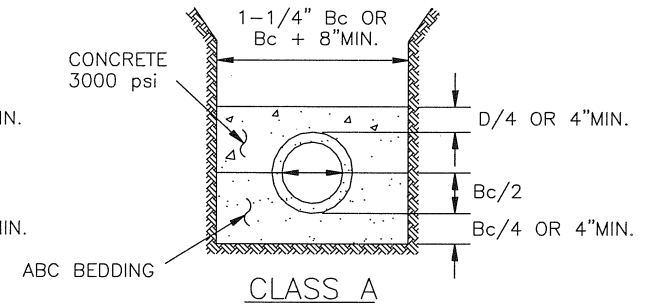
ALLOWABLE V.C.P. TRENCH LOADING

PIPE SIZE (INCHES)	V.C.P. THREE EDGE BEARING STRENGTH MIN.	ALLOWABLE TRENCH LOAD PER CLASS OF BEDDING SOIL WT.=130#/CU.FT. SAFETY FACTOR=1.5		
		CLASS A–1 L.F.=3.4	CLASS A L.F.=2.8	*CLASS B–1 L.F.=2.2
8	2200	4987	4107	3227
10	2400	5440	4480	3520
12	2600	5893	4853	3813
15	2900	6573	5413	4253
18	3300	7480	6160	4840
21	3850	8727	7187	5647
24	4400	9973	8213	6453
27	4700	10653	8773	6893
30	5000	11333	9333	7333
33	5500	12467	10267	8067
36	6000	13600	11200	8800
39	6600	14960	12320	9680



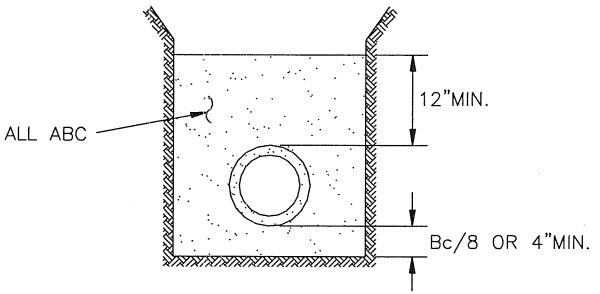
CLASS A–1

LOAD FACTOR: 3.4 REINFORCED CONCRETE, p=0.4%



CLASS A

LOAD FACTOR: 2.8 PLAIN CONCRETE



*CLASS B–1

LOAD FACTOR: 2.2 ABC ENCASEMENT

NOTE:

MAG SECTION 601 AND CITY OF PHOENIX SUPPLEMENT APPLIES FOR FOUNDATION, BEDDING, BACKFILL, MATERIALS AND COMPACTION.

* REV. 11/1/84

DETAIL NO.			APPROVED		DETAIL NO.
P1120	City of Phoenix STANDARD DETAIL	V.C.P. TRENCH LOADING	CITY ENGINEER	07-09-92 DATE	P1120

8" V.C.P. 3 EDGE BEARING STRENGTH=2200#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	18"	24"	30"	36"	42"	WIDER THAN 42"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12							12
14							14
16							16
18							18
20					A		20

10" V.C.P. 3 EDGE BEARING STRENGTH=2400#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	24"	30"	36"	42"	48"	WIDER THAN 48"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12							12
14							14
16							16
18						A	18
20							20

SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.					DETAIL NO.
P1121	City of Phoenix STANDARD DETAIL	8" & 10" V.C.P. TRENCH LOADING	APPROVED Kenny W Hain CITY ENGINEER	07-09-92 DATE	P1121

12" V.C.P. 3 EDGE BEARING STRENGTH=2600#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	24"	30"	36"	42"	48"	WIDER THAN 48"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12							12
14							14
16	A						16
18							18
20	A-1						20

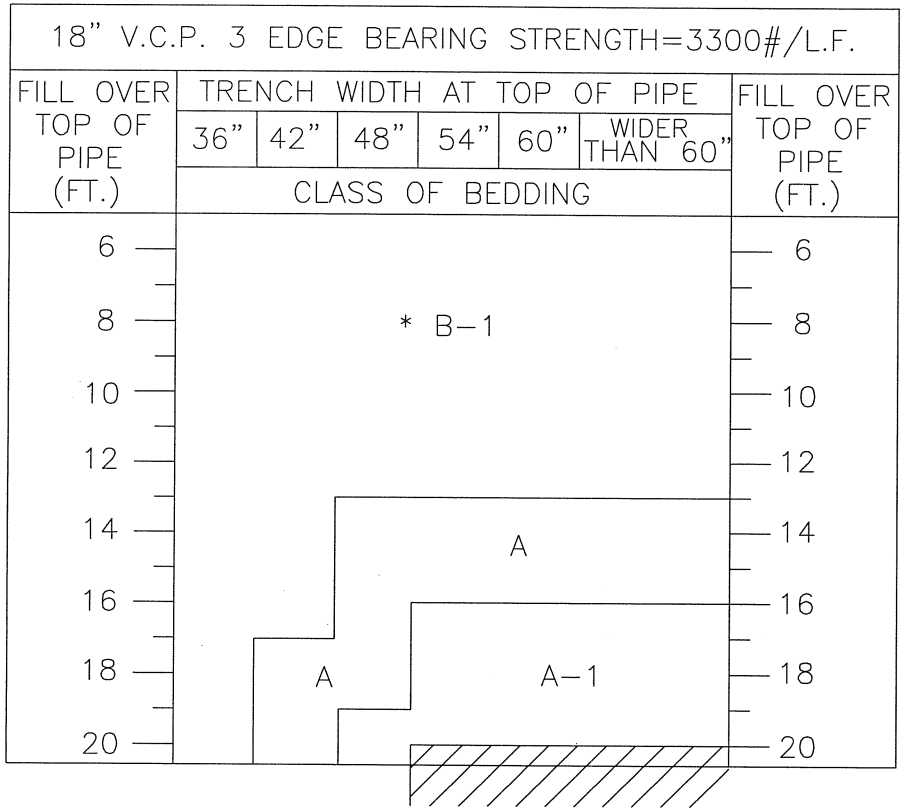
15" V.C.P. 3 EDGE BEARING STRENGTH=2900#/L.F.

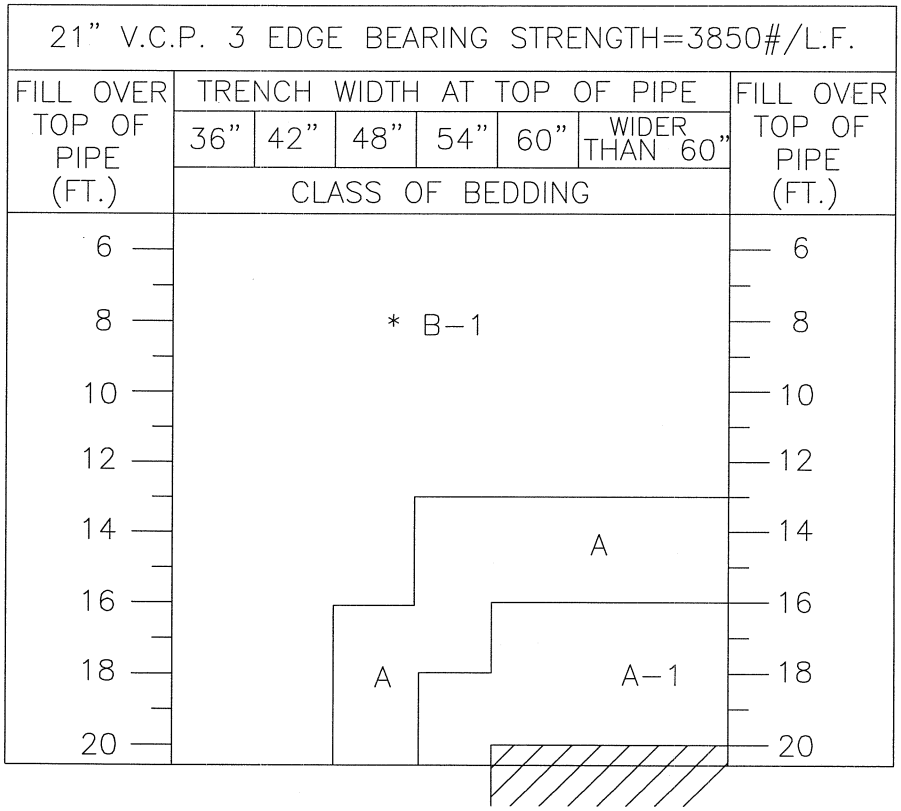
FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	30"	36"	42"	48"	54"	WIDER THAN 54"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12							12
14							14
16	A						16
18							18
20	A-1						20

SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.				APPROVED		DETAIL NO.
P1122	City of Phoenix STANDARD DETAIL	12" & 15" V.C.P. TRENCH LOADING		CITY ENGINEER	07-09-92 DATE	P1122





REQUIRES DESIGN ACTION

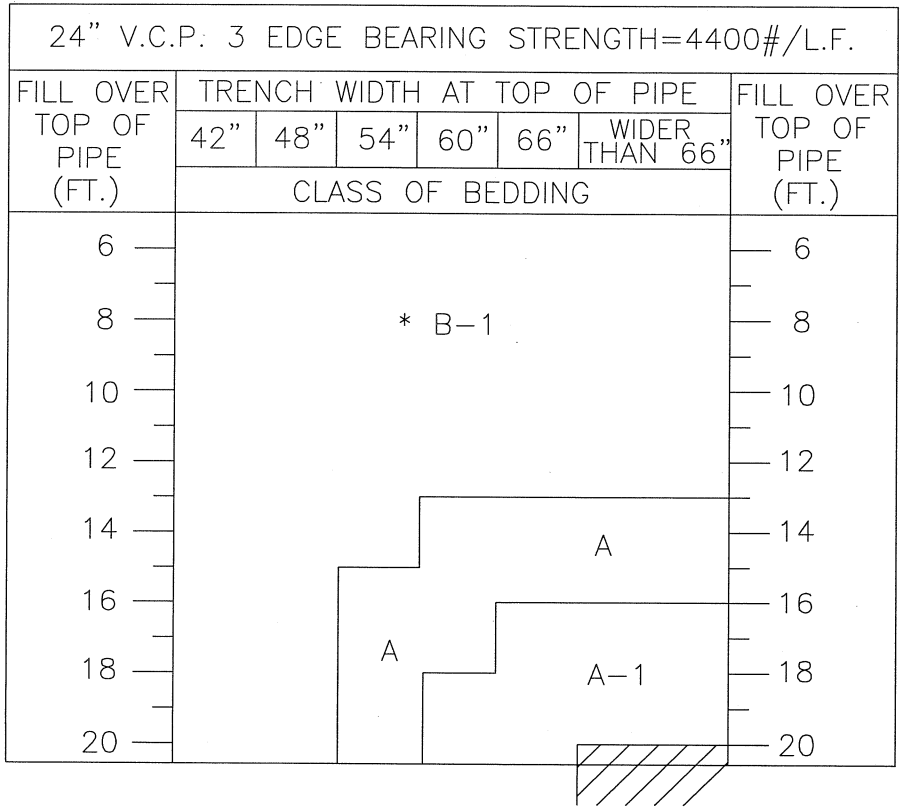
SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.				
P1123	City of Phoenix STANDARD DETAIL	18" & 21" V.C.P. TRENCH LOADING	APPROVED Kenny W Harris CITY ENGINEER — 07-09-92 DATE	DETAIL NO. P1123

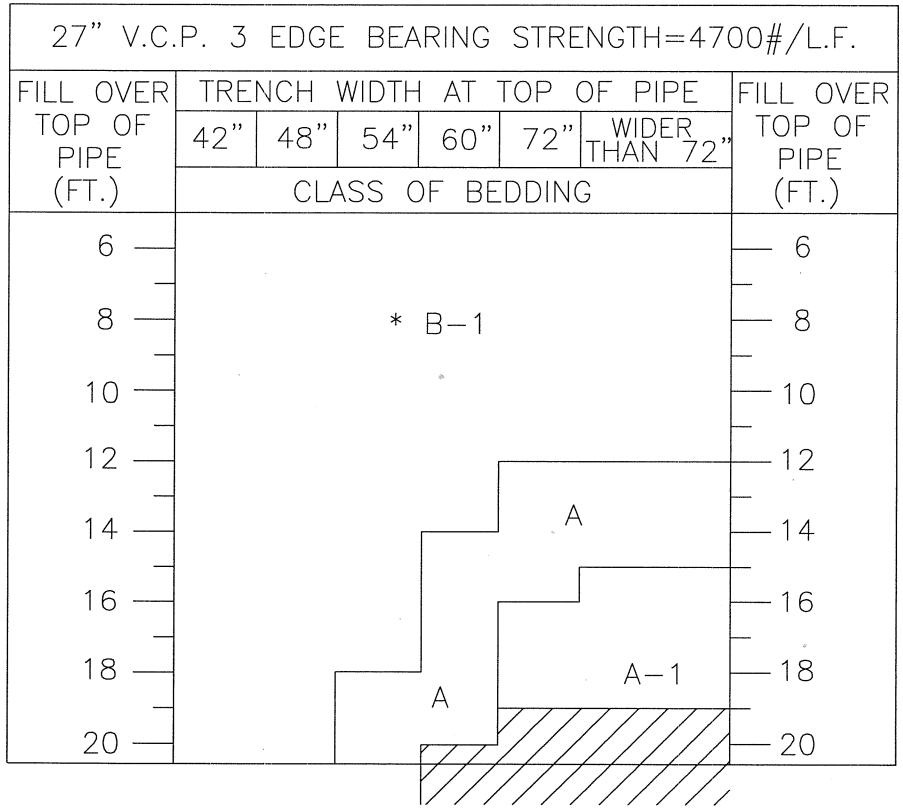
24" V.C.P. 3 EDGE BEARING STRENGTH=4400#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	42"	48"	54"	60"	66"	WIDER THAN 66"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12							12
14	A						14
16		A					16
18			A-1				18
20							20



27" V.C.P. 3 EDGE BEARING STRENGTH=4700#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	42"	48"	54"	60"	72"	WIDER THAN 72"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12					A		12
14							14
16							16
18	A					A-1	18
20							20



REQUIRES DESIGN ACTION

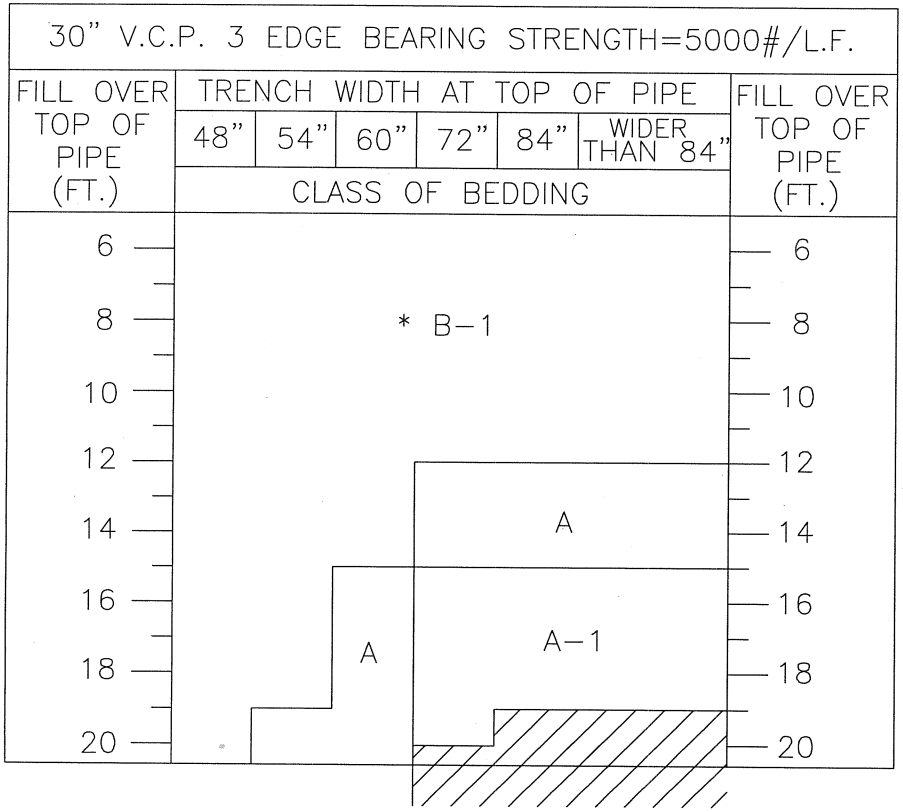
SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.					DETAIL NO.
P1124	City of Phoenix STANDARD DETAIL	24" & 27" V.C.P. TRENCH LOADING	APPROVED Kenny W Hann CITY ENGINEER	07-09-92 DATE	P1124

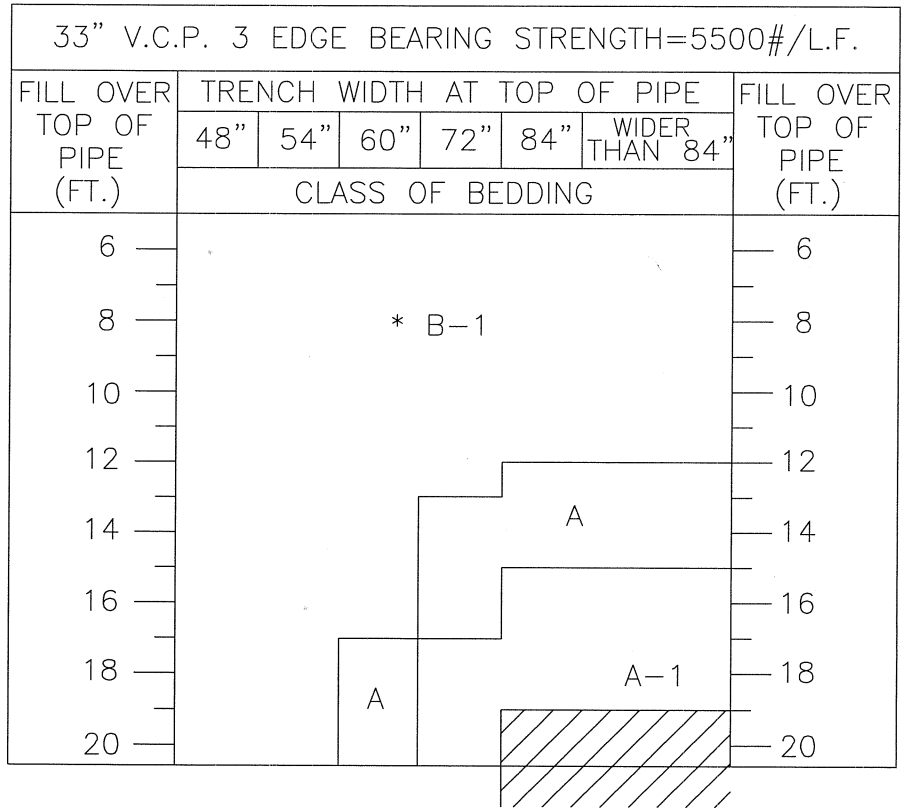
30" V.C.P. 3 EDGE BEARING STRENGTH=5000#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	48"	54"	60"	72"	84"	WIDER THAN 84"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12						A	12
14							14
16			A			A-1	16
18							18
20							20



33" V.C.P. 3 EDGE BEARING STRENGTH=5500#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	48"	54"	60"	72"	84"	WIDER THAN 84"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12						A	12
14							14
16							16
18			A			A-1	18
20							20



REQUIRES DESIGN ACTION

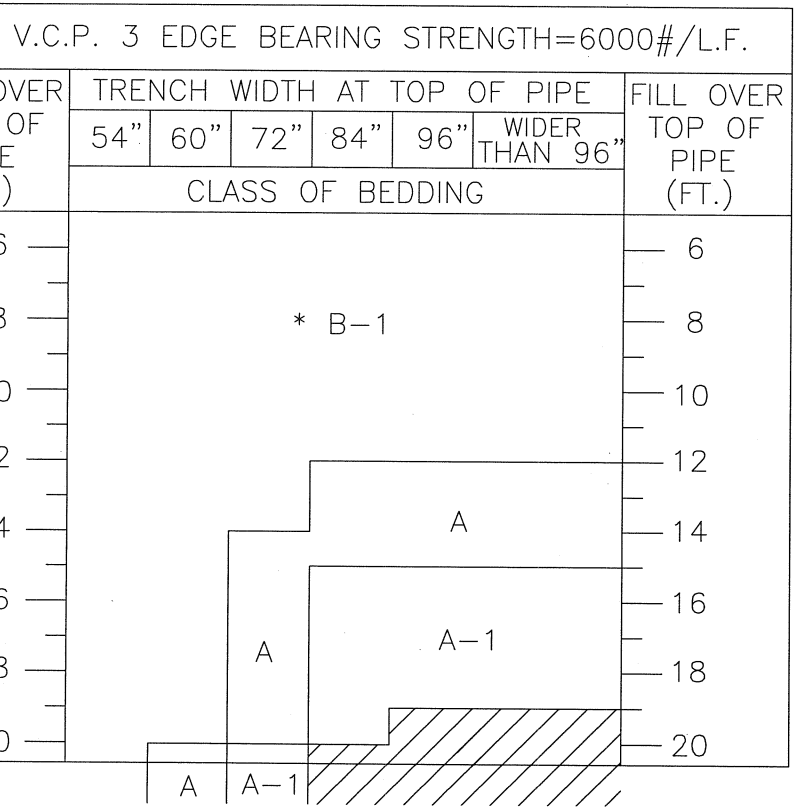
SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.	City of Phoenix		APPROVED		DETAIL NO.
P1125	STANDARD DETAIL	30" & 33" V.C.P. TRENCH LOADING	CITY ENGINEER	07-09-92 DATE	P1125

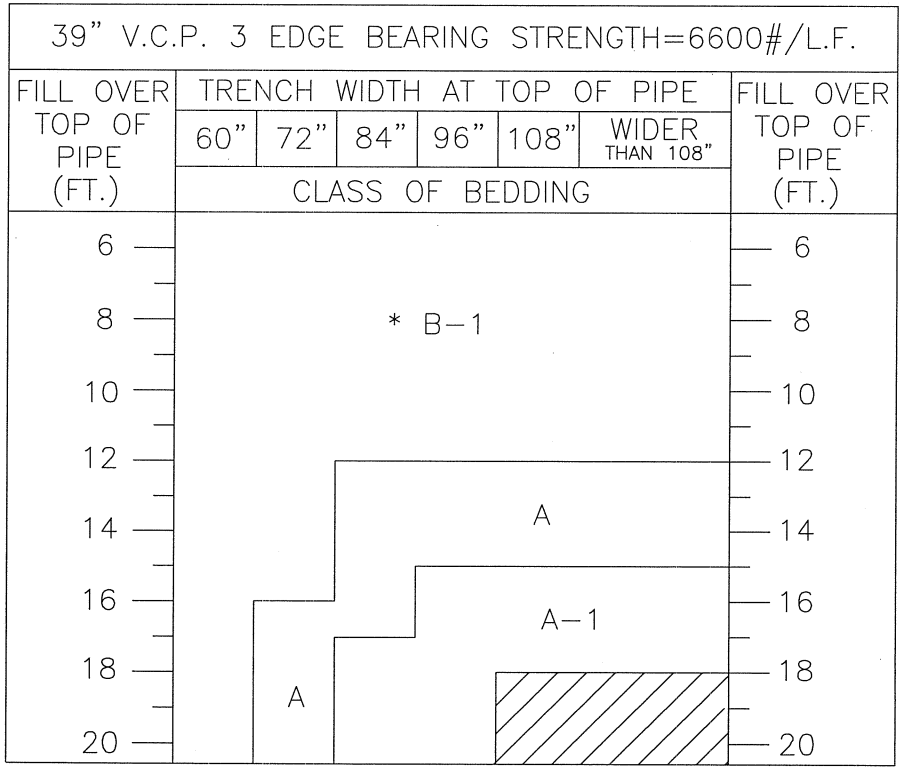
36" V.C.P. 3 EDGE BEARING STRENGTH=6000#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	54"	60"	72"	84"	96"	WIDER THAN 96"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12						A	12
14							14
16					A-1		16
18				A			18
20			A				20



39" V.C.P. 3 EDGE BEARING STRENGTH=6600#/L.F.

FILL OVER TOP OF PIPE (FT.)	TRENCH WIDTH AT TOP OF PIPE						FILL OVER TOP OF PIPE (FT.)
	60"	72"	84"	96"	108"	WIDER THAN 108"	
	CLASS OF BEDDING						
6	* B-1						6
8							8
10							10
12						A	12
14							14
16					A-1		16
18				A			18
20			A				20



REQUIRES DESIGN ACTION

SEE DETAIL P1120 FOR BEDDING DETAILS

* REV. 11/1/84

DETAIL NO.				APPROVED		DETAIL NO.
P1126	City of Phoenix STANDARD DETAIL	36" & 39" V.C.P. TRENCH LOADING		CITY ENGINEER	07-09-92 DATE	P1126

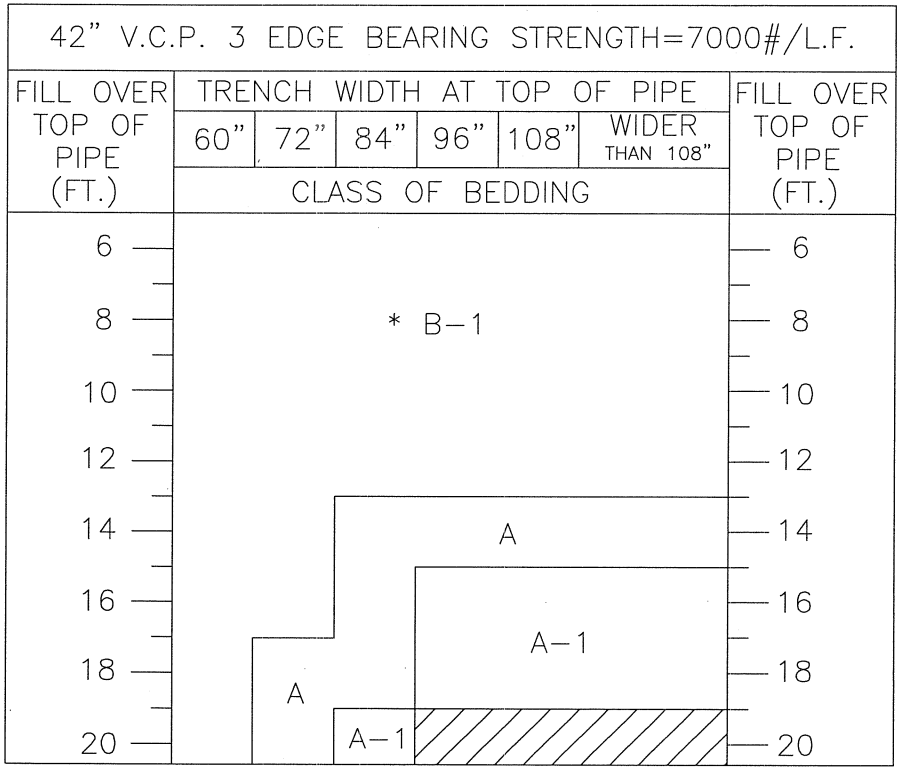
ALLOWABLE V.C.P. TRENCH LOADING

PIPE SIZE (INCHES)	V.C.P. THREE EDGE BEARING STRENGTH MIN.	ALLOWABLE TRENCH WIDTH PER CLASS OF BEDDING SOIL WT.=130#/CU.FT. SAFETY FACTOR=1.5		
		CLASS A–1 L.F.=3.4	CLASS A L.F.=2.8	*CLASS B–1 L.F.=2.2
42	7000	15867	13067	10267

SEE DETAIL P1120 FOR BEDDING DETAILS

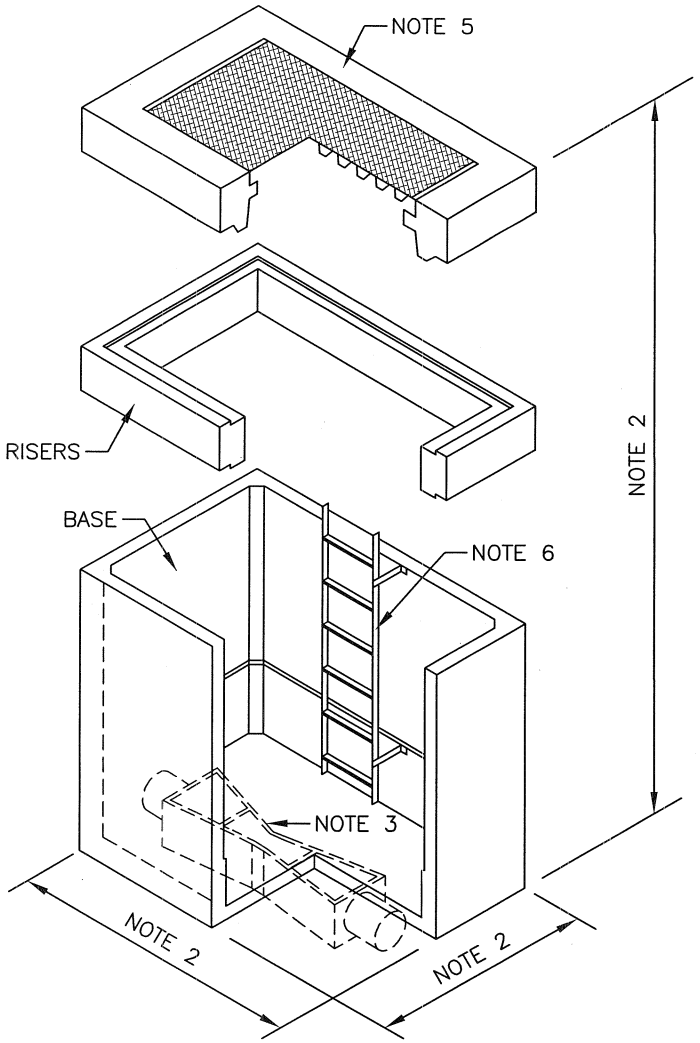
REQUIRES DESIGN ACTION

42" V.C.P. 3 EDGE BEARING STRENGTH=7000#/L.F.



* REV. 11/1/84

DETAIL NO. P1127	City of Phoenix STANDARD DETAIL	42" V.C.P. TRENCH LOADING	APPROVED Kenny W Hain CITY ENGINEER 07-09-92 DATE	DETAIL NO. P1127



NOTES

1. VAULT SHALL BE INSTALLED ONLY IN NON–TRAFFIC AREAS.
2. THE SIZE OF THE VAULT SHALL BE DETERMINED BY THE SIZE OF THE PRIMARY MEASURING DEVICE.
3. THE SELECTION OF TYPE AND SIZE OF A PRIMARY MEASURING DEVICE SHALL BE APPROVED BY THE CITY OF MESA INDUSTRIAL PRETREATMENT SECTION.
4. VAULT SHALL BE A PRE–CAST CONCRETE FLUME VAULT BY UTILITY VAULT CO., SMITH PRECAST, OR EQUAL. LIFTING INSERTS AND ACCESS DOORS INSTALLED BY PRE–CAST MANUFACTURER.
5. ACCESS DOORS SHALL BE HINGED, FLUSH MOUNTED WITH RECESSED LIFTING HANDLES AND SHALL HAVE PENTAHEAD LOCKING BOLTS WITH A RECESSED AREA FOR SECURING THE VAULT WITH A PADLOCK AND SHALL BE TORSION ASSISTED. THE ACCESS DOORS SHALL HAVE A CLEAR OPENING OF NOT LESS THAN 36" X 60".
6. LADDER SHALL BE A MINIMUM OF 1.5 FEET WIDE. LADDER AND ALL LADDER HARDWARE SHALL BE FIBERGLASS OR STAINLESS STEEL.
7. WHEN REQUIRED FOR THE PURPOSE OF OBTAINING MONTHLY CITY OF MESA WASTEWATER SERVICE CHARGE INFORMATION, THE SECONDARY MEASURING DEVICE SHALL BE A MILLTRONIC OPEN CHANNEL MONITOR. MODEL TYPE TO BE APPROVED BY THE CITY OF MESA'S INDUSTRIAL PRETREATMENT SECTION.

FLUME VAULT STRUCTURE

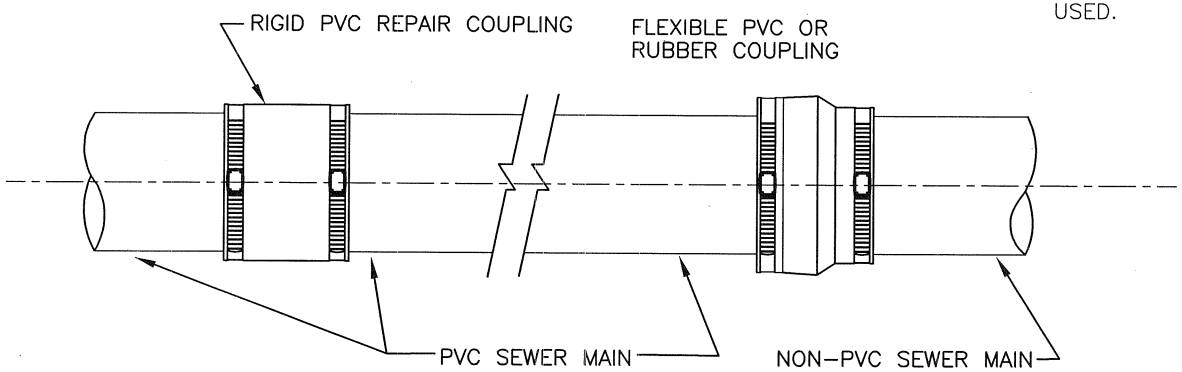
DETAIL NO. M–33

REV. 01/01/02

GENERAL NOTES

1. PVC TYPE COUPLINGS SHALL BE USED FOR ALL REPAIRS ON PVC SEWER LINES.
2. RUBBER TYPE COUPLINGS MAY BE USED ONLY WHEN REPAIRING OTHER TYPES OF SEWER LINES, SUCH AS CLAY, DUCTILE IRON, OR TRANSITIONS FROM PVC TO OTHER TYPE PIPE.
3. APPROVED GASKETED SEWER FITTINGS INCLUDE FERNCO AND MULTI FITTINGS, INC.
4. BACKFILL MATERIAL FROM THE BOTTOM OF THE EXCAVATION TO THE SPRING LINE OF THE PIPE SHALL BE PLACED TO PROVIDE FULL SUPPORT FOR THE PIPE. BACKFILL, WHETHER IMPORTED OR NATIVE, THAT IS USED FOR THIS PURPOSE SHALL BE GRANULAR PER M.A.G. SECTION 601.4.6; BE PLACED AT A MOISTURE CONTENT SUCH THAT IT IS SEMI-FLOWABLE; BE LOW-SHRINK AND REQUIRE MINIMAL COMPACTION EFFORT. MATERIALS SUCH AS CONTROLLED LOW STRENGTH MATERIAL (CLSM) PER M.A.G. SECTION 728, PORTLAND CONCRETE PER M.A.G. SECTION 725, ABC SLURRY, PEA GRAVEL, ETC. MAY BE USED.

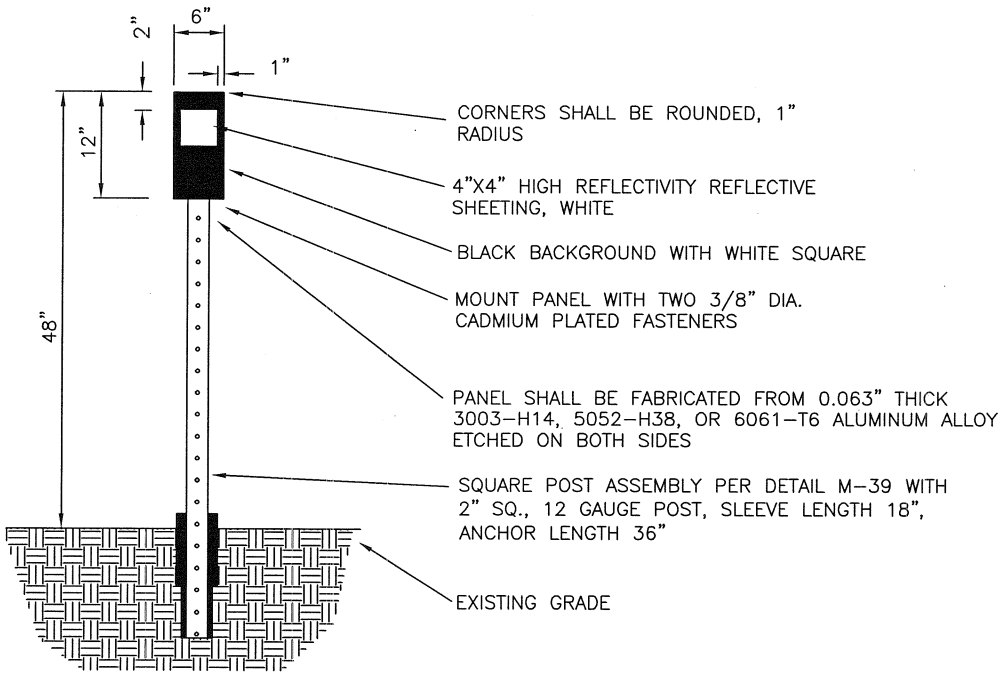
REPAIR COUPLINGS



GASKETED SEWER FITTINGS

DETAIL NO. M-34

EFF. 02/01/02



DELINEATOR

DELINEATOR

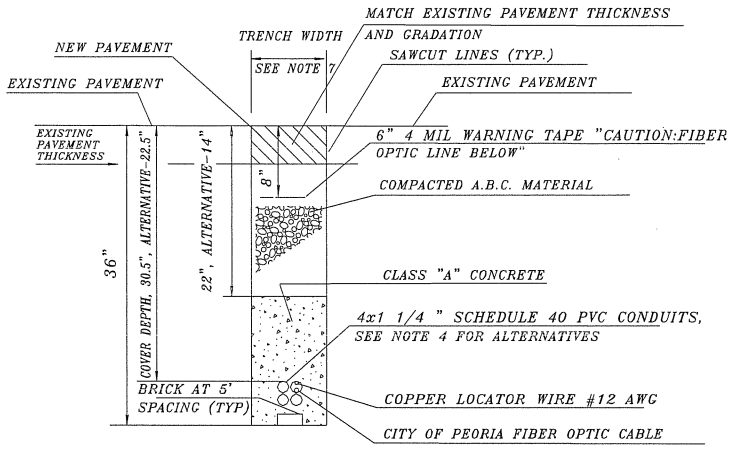
DETAIL NO. M-61

REV. 01/01/05

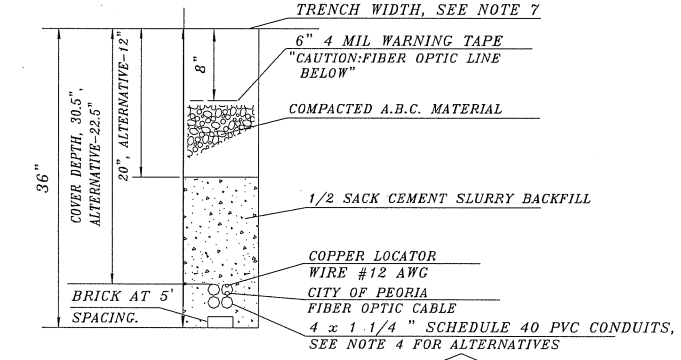
PEORIA DETAIL 175
INTERCONNECT TRENCH DETAIL

APPROVALS:

CITY ENGINEER DATE



TYPICAL "A"
TRENCH DETAIL FOR ASPHALT PAVEMENT — A / IT-121



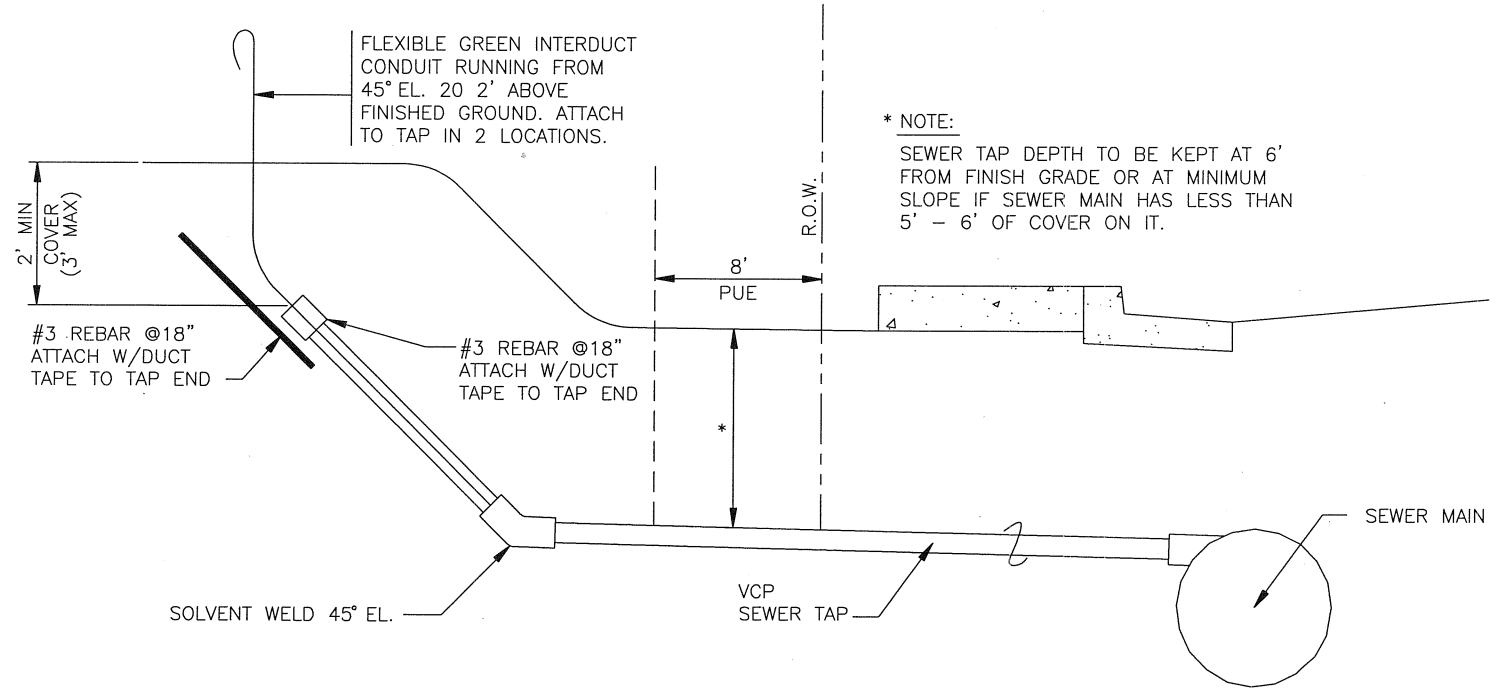
TYPICAL "B"
EARTH TRENCH DETAIL — B / IT-121

NOTES:

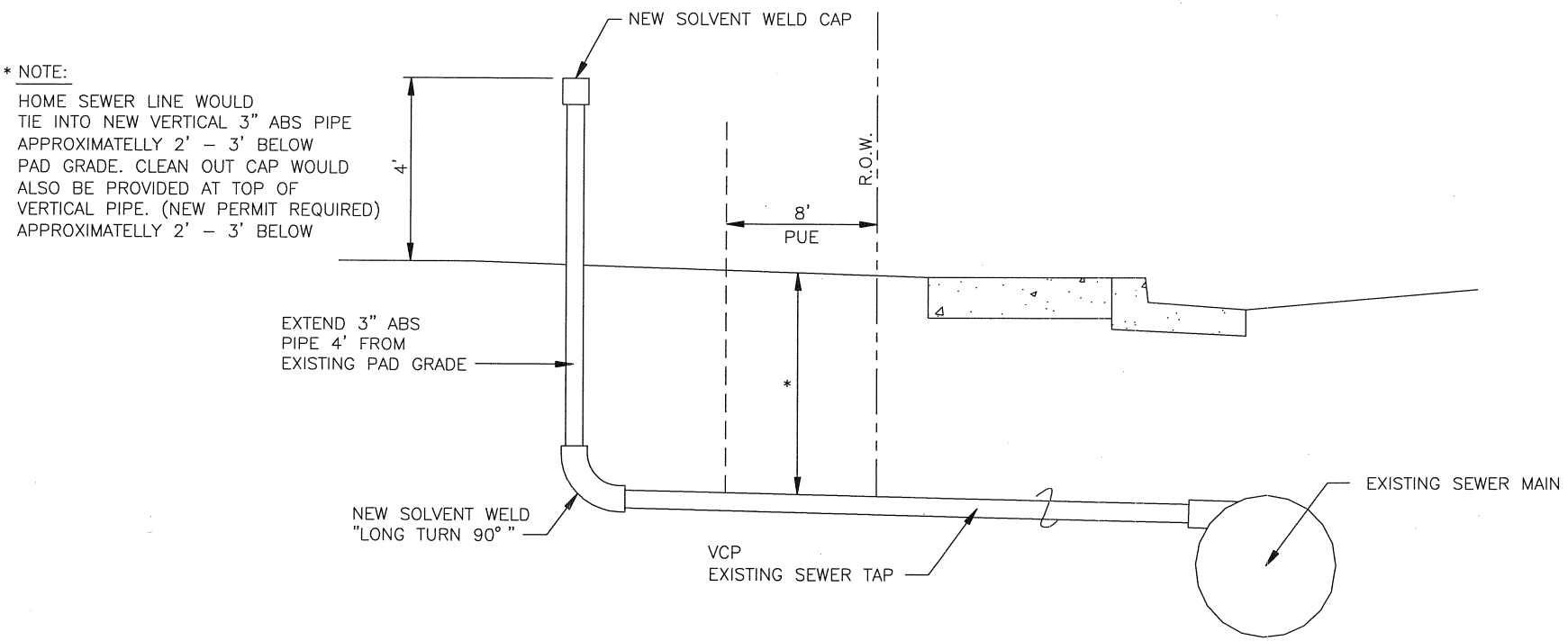
1. TRENCH DEPTH VARIES BASED ON CONFLICTS WITH EXISTING UTILITIES.
2. BID ITEM FOR PROVIDING A TRENCH THAT IS A MINIMUM OF 36 INCHES DEEP INCLUDES INSTALLING FIBER OPTIC DUCT AND PROVIDING BACKFILL, COMPLETE IN PLACE. THIS ITEM SHALL PROVIDE A MINIMUM COVER DEPTH OF 30.5 INCHES OVER THE CONDUIT DUCT. ALL WARNING TAPE, CONDUIT SPACERS, BRICKS, AND COMPACTION WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID OF ITEM, "TRENCHING (36") AND INSTALLATION OF FIBEROPTIC DUCT, AND BACKFILL, COMPLETE, IN PLACE." AN ALTERNATIVE TRENCH DEPTH OF 28 INCHES SHALL BE INCLUDED IN THE BID PRICE UNDER ALTERNATIVE ITEM, "TRENCHING (28") AND INSTALLATION OF FIBEROPTIC DUCTS AND BACKFILL, COMPLETE, IN PLACE." THE ALTERNATIVE BID ITEM SHALL PROVIDE A MINIMUM COVER DEPTH OF 22.5 INCHES OVER THE CONDUIT DUCTS. ALL INCIDENTALS TO THE BASIC BID ITEM SHALL ALSO BE CONSIDERED INCIDENTAL TO THE ALTERNATIVE ITEM.
3. BORING SHALL BE ALLOWED WITH ENGINEERS PRIOR APPROVAL.
4. IF THE CONDUIT ROUTING IS MODIFIED TO CROSS AN EXISTING PORTLAND CEMENT CONCRETE DRIVEWAY THE CONDUITS SHALL BE PLACED BY BORING. ALL ASPHALT DRIVEWAYS MAY BE TRENCHED.
5. ALL CONDUIT BENDS SHALL BE CONCRETE ENCASED FOR A MINIMUM OF TWO (2) FEET BEYOND EACH END OF THE BEND.
6. A 1/2 SACK OF CEMENT SLURRY BACKFILL SHALL BE USED WHEN BACKFILLING CONDUITS INSTALLED IN A TRENCH IN EARTH. CLASS "A" CONCRETE SHALL BE USED AS BACKFILL FOR ALL CONDUITS INSTALLED UNDER PAVEMENT. CONDUITS SHALL BE SUPPORTED AND ANCHORED IN THE TRENCH PRIOR TO BACKFILLING WITH THE CEMENT SLURRY OR CLASS "A" CONCRETE.
7. TRENCH WIDTH MAY NOMINALLY VARY FROM 6" TO 8" BUT SHALL NOT EXCEED 10 INCHES.
8. A SINGLE CONTINUOUS INSULATED COPPER LOCATOR WIRE AWG #12 SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE CONDUIT RUN.

I:\GUIDE\DETAILS\175.DWG

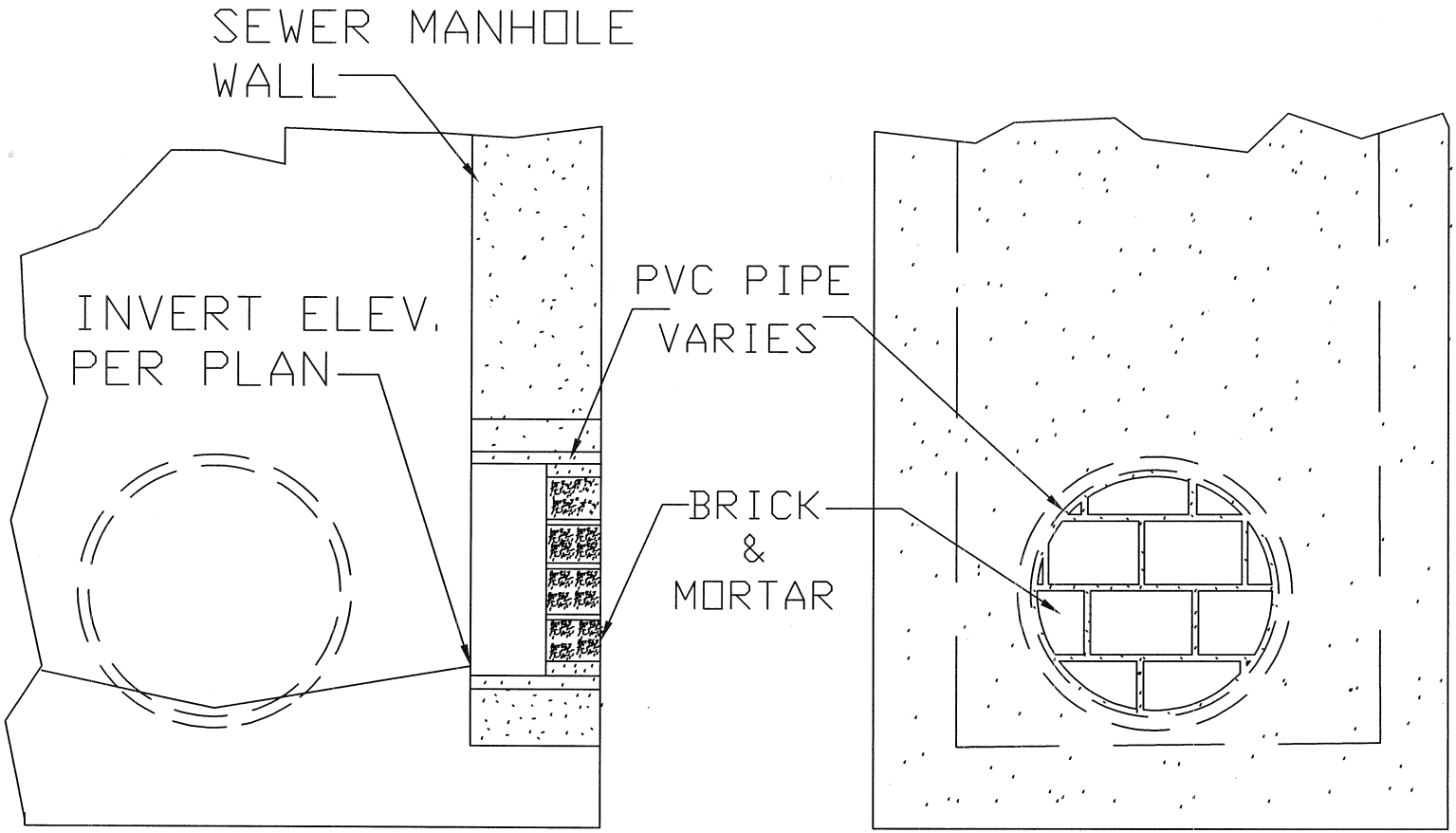
12/7/00



DETAIL NO. P1431	City of Phoenix STANDARD DETAIL	SEWER TAP DEPTH & MARKING	APPROVED FOR CITY ENGINEER AcDbRasterImage (ISM)	8-6-99 DATE	DETAIL NO. P1431



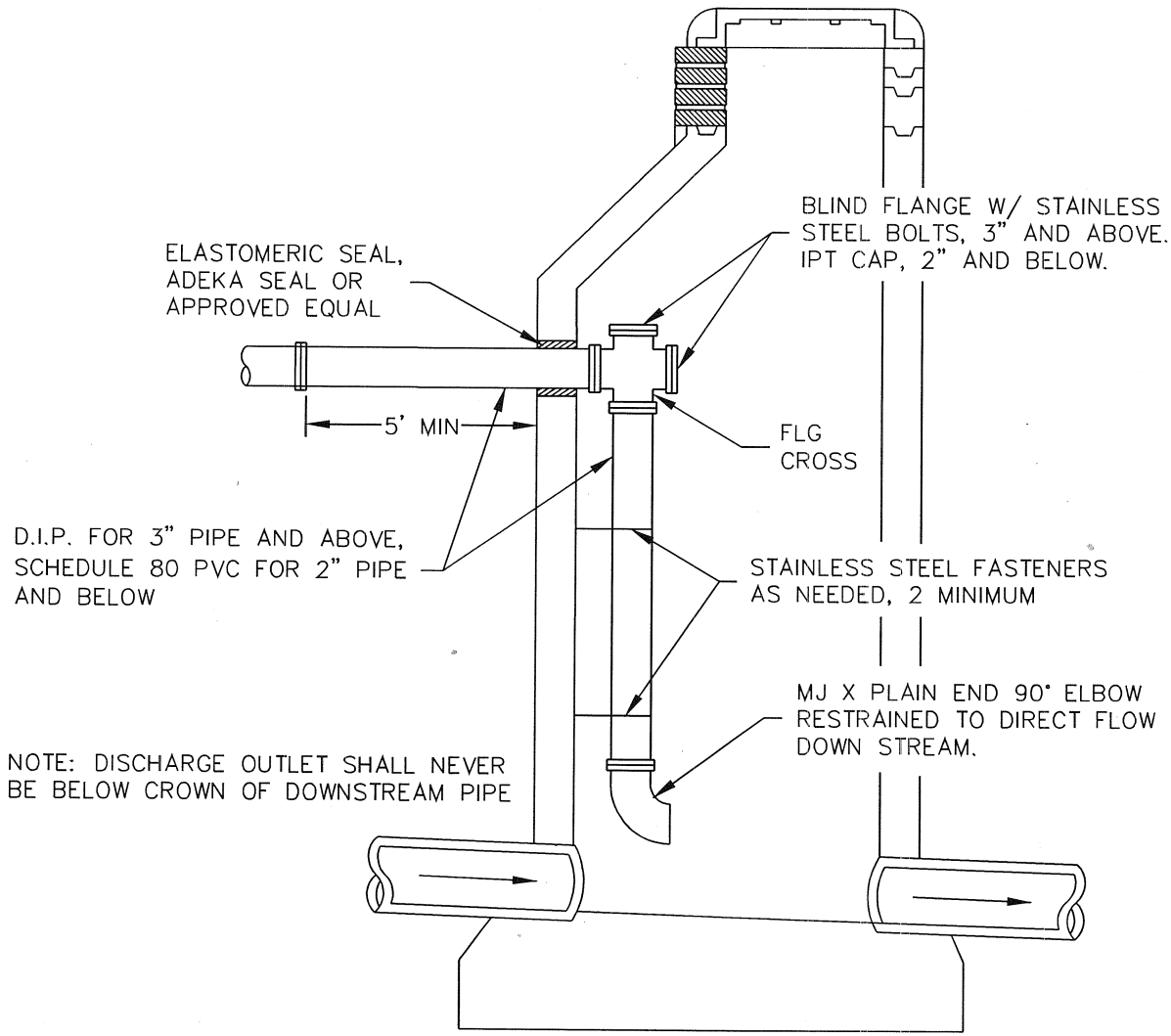
DETAIL NO.	City of Phoenix		APPROVED		DETAIL NO.
P1432	STANDARD DETAIL	SEWER TAP RETROFITTING	FOR CITY ENGINEER	8-6-99 DATE	P1432
			AcDbRasterImage (ISM)		



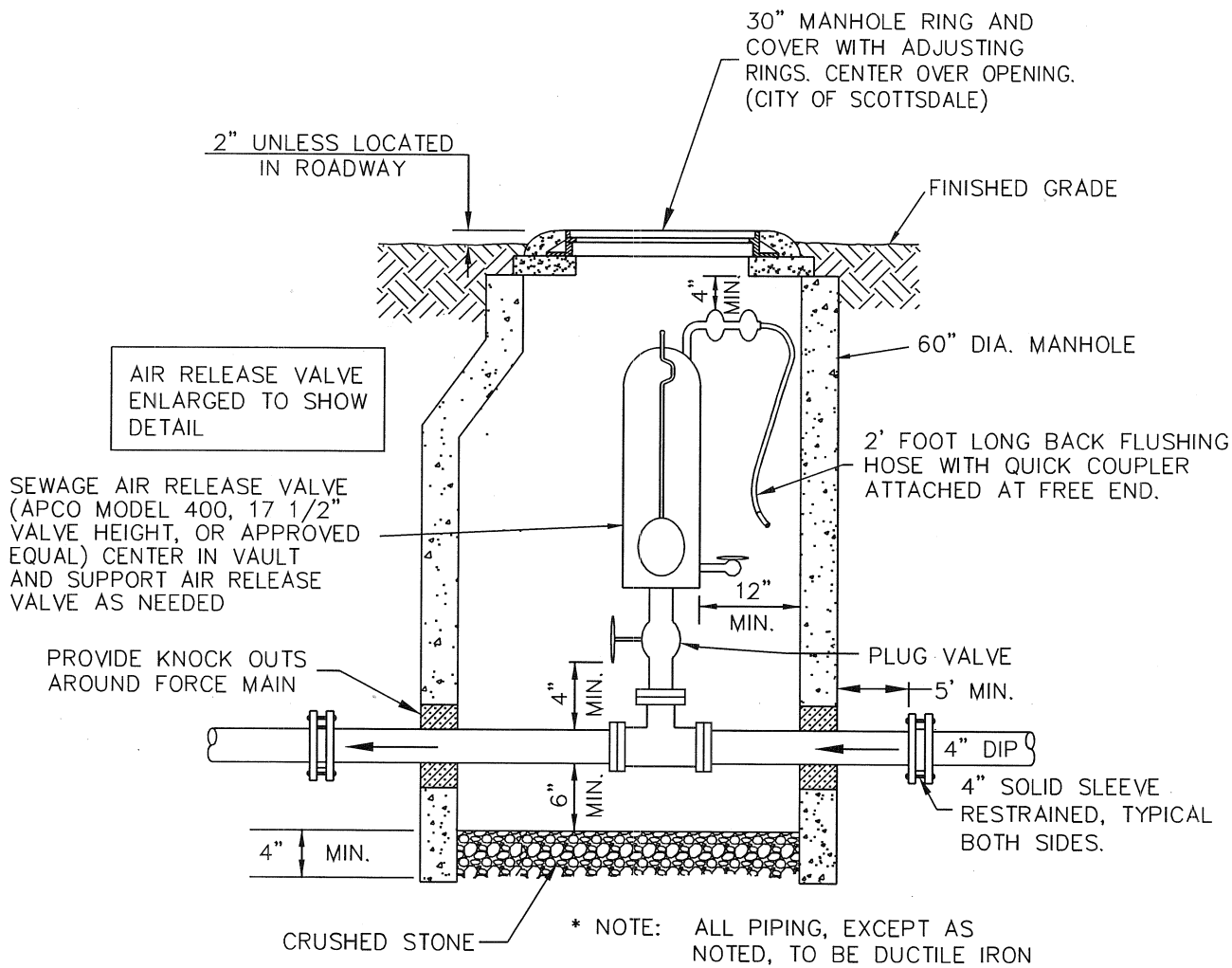
NOTE:

1) FOR FUTURE VCP or DUCTILE IRON PIPE INSTALLATION.
2) The PVC diameter shall be the next size larger (2" minimum) than the proposed future pipe connection.

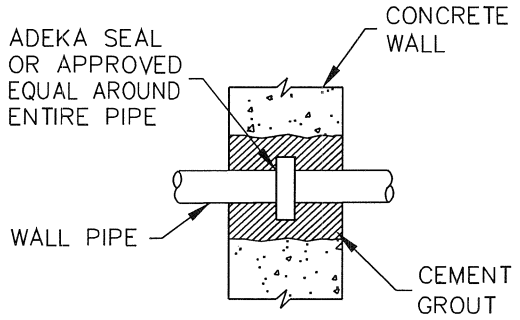
DETAIL NO.		SANITARY SEWER	APPROVED	DETAIL NO.
P1435	City of Phoenix STANDARD DETAIL	MANHOLE KNOCKOUT	Mario Saddamando CITY ENGINEER — 07-19-04 DATE	P1435



DETAIL NO. 2402	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	FORCE MAIN DISCHARGE MANHOLE	DETAIL NO. 2402



* NOTE: ALL PIPING, EXCEPT AS NOTED, TO BE DUCTILE IRON WITH FLANGE JOINTS AND STAINLESS STEEL BOLTS.



SEAL DETAIL

NOTE: TO BE USED FOR ALL PIPES PASSING THROUGH WALLS.

DETAIL NO. 2405	City of Scottsdale Standard Details	APPROVED BY: Scottsdale Standards & Specifications Committee	SEWER AIR RELEASE VALVE	DETAIL NO. 2405